

**In The Matter Of:**

**ORIGINAL**

*Bud Lee and Cindy Lundman v.  
The Metropolitan Government of Nashville, et al.*

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*Gary Vilke, M.D.  
September 15, 2008*

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*Vowell & Jennings, Inc.  
214 Second Avenue North  
Suite 207  
Nashville, Tennessee 37201  
615-256-1935*

**VJ** V O W E L L  
AND  
J E N N I N G S

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UNITED STATES DISTRICT COURT  
FOR THE MIDDLE DISTRICT OF TENNESSEE

BUD LEE and CINDY LUNDMAN as  
next friend and as natural  
parents of PATRICK LEE, deceased,

Plaintiffs,

vs.

THE METROPOLITAN GOVERNMENT OF  
NASHVILLE AND DAVIDSON COUNTY,  
et al.

Defendants.

No. 3:06-cv-00108

VIDEOTAPED DEPOSITION OF GARY VILKE, M.D.

TAKEN ON: Monday, September 15, 2008

TAKEN AT: 600 West Broadway, Suite 2700  
San Diego, California

REPORTED BY: JOYCE E. HOSTETLER  
CSR No. 5216, RPR

VOWELL & JENNINGS, INC.  
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8 BY: TED BENDRICK  
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1 I N D E X

2 WITNESS

EXAMINED BY

PAGE

3 GARY VILKE, M.D.

4 Mr. Bednarz, Sr.

7

11 E X H I B I T S

12 (None Offered)  
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1 San Diego, California; September 15, 2008; 9:28 a.m.  
2  
3 THE VIDEOGRAPHER: Here begins Volume 1,  
4 videotape No. 1 in the deposition of Dr. Gary Vilke in  
5 the matter of Bud Lee and Cindy Lundman, et al. versus  
6 Metropolitan Government of Nashville and Davidson  
7 County, Tennessee, et al. in United States District  
8 Court for the Middle District of Tennessee. The case  
9 number is 3:06-cv-108.  
10 Today's date is September 15th, 2008. The time  
11 on the video monitor is 9:28 a.m. The video operator  
12 today is Ted Bendrick contracted by Merrill Legal  
13 Solutions of 20750 Ventura Boulevard, Suite 205,  
14 Woodland Hills, California. This video deposition is  
15 taking place at 600 West Broadway, Suite 2700,  
16 San Diego, California.  
17 Counsel, please voice identify yourselves and  
18 state whom you represent.  
19 MR. BEDNARZ, SR.: Joe Bednarz, Sr. and Joe  
20 Bednarz, Jr. for the plaintiff.  
21 MS. OLIVER: Keli Oliver for the Metropolitan  
22 Government.  
23 MR. BROWN: John M.L. Brown for Officer Mays,  
24 Officer Scott, Officer Wright, Officer Fisher,  
25 Sgt. Pinkelton.

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1 Q Looking over this e-mail, it appears to me that  
2 you were retained somewhere around June the 19th of  
3 2008; is that correct?  
4 A That -- that sounds correct, yes.  
5 Q And then the report that I've been provided  
6 that lists your opinion is dated July 30th, 2008.  
7 A Correct.  
8 Q Did you furnish anything, the lawyers anything  
9 in writing prior to this report being generated on  
10 July 30th?  
11 A I did not.  
12 Q Did you communicate your opinions  
13 telephonically?  
14 A I believe we had a telephone conversation, yes.  
15 Q Okay. Did you, prior to dictating this report,  
16 transmit any of your opinions by e-mail?  
17 A I did not.  
18 Q Okay. Did you continue to correspond with  
19 Mr. Brown by e-mail after this e-mail that is in your  
20 file?  
21 A I don't believe I received any e-mails.  
22 Everything has been telephonically, I believe.  
23 MR. HARRIS: Joe, excuse me. This is Tyree  
24 Harris in Nashville. If the speaker could be moved a  
25 little closer to the witness. Ms. Underwood and I can

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1 MR. HARRIS: Tyree Harris for Officer Jaime  
2 Scruggs.  
3 MS. UNDERWOOD: Jaimee Underwood for Officer  
4 Chris Brooks.  
5 MS. ANDERSON: Kathleen Anderson for Taser  
6 International.  
7 THE VIDEOGRAPHER: Our court reporter today is  
8 Joyce Hostetler of Merrill Legal Solutions. And would  
9 the court reporter please swear in the witness.  
10  
11 GARY VILKE, M.D.,  
12 having been administered an oath, testified as follows:  
13  
14 EXAMINATION  
15 BY MR. BEDNARZ, SR.:  
16 Q Good morning, Doctor. I'm Joe Bednarz and we  
17 met earlier.  
18 In preparation for this deposition did you  
19 review any literature? And I'm speaking of literature  
20 outside of the documents that you've been furnished.  
21 A I did not specifically review any new -- or any  
22 old pieces of literature.  
23 Q Okay. Did you talk to anybody outside of the  
24 lawyers about any of the issues of the case?  
25 A I did not.

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1 barely hear you.  
2 MR. BEDNARZ, SR.: Okay.  
3 MR. BROWN: We're working on it.  
4 THE WITNESS: Is that better?  
5 MR. BEDNARZ, SR.: Is that better, Tyree?  
6 THE WITNESS: Testing, testing.  
7 MR. HARRIS: We could hear your questions fine.  
8 It was the answers that we were having difficulty  
9 hearing.  
10 MR. BEDNARZ, SR.: Okay. We've moved the  
11 speaker closer, Tyree. We'll see if it works better.  
12 MR. HARRIS: Okay. Thank you very much.  
13 BY MR. BEDNARZ, SR.:  
14 Q Doctor, since providing this report on  
15 July 30th, 2008, have you been provided with additional  
16 material concerning this case?  
17 A I do not believe so. There may -- I do not  
18 believe I've had anything additional to that. I have  
19 the whole list of materials that I have reviewed, as  
20 long as they match up correct.  
21 Actually, there may be some materials, as I  
22 look on here, I'm looking at it, some other expert  
23 reports from Dr. Ho, Dr. Dawes and a number of that  
24 group there. So there are actually some additional  
25 reports that have come to me since this -- this list has

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1 been generated.  
2 Q Okay. And I did notice that in your looseleaf  
3 folder you have all of -- or you have quite a few of the  
4 reports of other defendant experts in this case.  
5 A I do, yes.  
6 Q How many of those experts do you personally  
7 know?  
8 A I know Dr. Ho and Dr. Dawes. And I've met  
9 Dr. -- Dr. Graham in there? Dr. Graham I believe too.  
10 Q Graham, okay. Have you ever met Dr. Wetli?  
11 A I have met Dr. Wetli as well.  
12 Q Okay. Was he speaking at the same seminar in  
13 which you met John Brown?  
14 A Yes, he was.  
15 Q In terms of excited delirium itself, do you  
16 subscribe to any particular physicians -- that's a  
17 terrible question. Let me strike that.  
18 I've read in the past where you have considered  
19 Dr. DiMaio's textbooks on pathology to be reliable  
20 sources?  
21 A I have reviewed his textbooks, and I consider  
22 them to be sources of information.  
23 Q Okay. Have you also read the information  
24 concerning excited delirium in the literature by  
25 Dr. Wetli?

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1 Dr. DiMaio?  
2 A Whether catecholamines participate or not?  
3 Q Or how much they participate.  
4 A I didn't really go into degrees. I know  
5 they -- both of them believe the participation of the  
6 catecholamines, they do have an effect, but I didn't  
7 look into the details of how much one subscribes  
8 compared to the other.  
9 Q I take it you had not read Dr. Wetli's  
10 deposition in this case?  
11 A I have not read his deposition, correct.  
12 Q Have you been briefed on the essential  
13 testimony of Dr. Wetli in this case?  
14 A I have not been briefed on any of the specifics  
15 of his testimony.  
16 Q Okay. And I asked Dr. Wetli a question from a  
17 prior deposition when we were talking about a simplistic  
18 way of trying to look at what happens when a patient  
19 dies of excited delirium. And there was a quote to the  
20 effect of they essentially overdose on adrenaline. What  
21 is your opinion in regard to that issue? Do people that  
22 die of excited delirium overdose on adrenaline?  
23 A Certainly the component, as I commented  
24 earlier, it's a revving up of one's system with the  
25 adrenaline or the epinephrine stores. You can call it

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1 A I have read his materials.  
2 Q And did it come -- did you notice that there  
3 was a difference of opinion as to how excited delirium  
4 causes death?  
5 MS. OLIVER: Object to the form.  
6 THE WITNESS: How it causes death?  
7 BY MR. BEDNARZ, SR.:  
8 Q Yes. Do you recall any significant  
9 differences?  
10 A I certainly don't recall anything that stands  
11 out as a -- as a vast difference between the two.  
12 Q Okay. So if I was to ask you do you subscribe  
13 to one theory of one of those authors versus the other,  
14 your answer would be no?  
15 A I'd probably have to rereview the theories if  
16 you're asking me to make a decision between the two, the  
17 specifics that you're asking.  
18 Q What effect do the catecholamines play in  
19 regard to the mechanism of death, in your opinion?  
20 A Well, catecholamines are certainly  
21 participatory in the -- the whole system of excited  
22 delirium. That's part of the revving up of the cycle,  
23 so they are participatory.  
24 Q And are you aware of any differences in regard  
25 to that opinion on catecholamines between Dr. Wetli and

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1 an overdose. It's certainly an overuse of the  
2 adrenaline that we normally would use, and a lot of the  
3 protective mechanisms to shut down that cycle are lost  
4 in excited delirium which is why the levels seem to go  
5 up and up and we see a lot of the symptoms that we do  
6 see during it.  
7 Q Okay.  
8 A So I would agree with the concept of it's an  
9 overdose of -- in part, an overdose of adrenaline.  
10 Q Okay. And how does this overdose of adrenaline  
11 affect the physiology of the patient that dies?  
12 A Well, adrenaline is epinephrine. It's the  
13 flight or fight type of material that our body releases.  
14 And so the physiologic presentations vary from  
15 individual to individual. You'll see typically an  
16 increase in heart rate, you'll see typically an increase  
17 in agitation, you'll see excitability, hyperactivity,  
18 you'll see potentially -- it's sort of a super-human  
19 strength can come with that. Elevated temperature can  
20 come with that. The eyes, dilated pupils can come with  
21 that.  
22 So anything that sort of is a revving up of  
23 your flight or fight stimulation is what adrenaline  
24 does, and then you just take that to the next level.  
25 And some people will have certain presentations compared

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1 to others. Not everybody will exhibit every form.  
2 Q Okay. And do I understand you say that it  
3 causes tachycardia?  
4 A It causes tachycardia.  
5 Q And help me out here, Dr. Vilke. I'm just  
6 trying to understand how the adrenaline plays into the  
7 actual mechanism of death. You have an increased heart  
8 rate. In some cases you have elevated temperature.  
9 First of all, in this case do you have any evidence that  
10 there was elevated temperature at any time?  
11 A Not significantly elevated temperature. There  
12 was, I believe, a low grade, around 100 or so  
13 documented.  
14 Q Would you agree that so far as the evidence is  
15 concerned, there is no indication that hyperthermia  
16 played any role in his death?  
17 MS. OLIVER: Object to the form.  
18 THE WITNESS: Hyperthermia doesn't typically  
19 play a role in the death. It's a symptom that's noted  
20 but usually is not the cause of death.  
21 BY MR. BEDNARZ, SR.:  
22 Q So other than increasing the heart rate, what  
23 is the adrenaline doing to the pH factor?  
24 A Adrenaline itself specifically does not  
25 typically change pH balance. It can change some of the

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1 Q And I take it that when a person does not have  
2 excited delirium and they have this adrenaline from  
3 whatever source, the mind somehow regulates the  
4 physiology of the individual?  
5 A Well, it depends on the source of the  
6 adrenaline.  
7 Q Okay.  
8 A So I need to -- cocaine is a -- is an  
9 epinephrine uptake blocker, so its effect is to block  
10 the uptake of the adrenaline in your body which gives  
11 you the physiologic findings of that. Going and having  
12 three Red Bulls is sort of a caffeinated way of -- the  
13 caffeine there does affect somebody, gives you the  
14 symptoms of an epinephrine rush. It's not necessarily  
15 giving you epinephrine. And that's why people get --  
16 people get different presentations. Not everybody  
17 presents the same way. Some people may present with  
18 ultramental status and delusions. Some may be  
19 cognitively less affected but more physiologically  
20 affected, real agitated, real jittery. So it depends on  
21 the individual.  
22 Q Okay. Well, getting -- moving to this case,  
23 Doctor, would you tell me what your ultimate opinion is  
24 in regard to the causes and mechanism of death? In  
25 other words, if you take me through this in a lay -- lay

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1 physiologic parameters that can affect pH. So, for  
2 example, if I gave you a dose of adrenaline, I just  
3 injected epinephrine into you, you would have the  
4 tachycardia, you would probably get an elevated blood  
5 pressure, you would probably get sweaty, you'd probably  
6 get palpitations or the feeling of palpitations because  
7 the heart rate's going up. You would then probably  
8 breathe a little bit faster. When you breathe faster,  
9 you blow carbon dioxide down, so you're ventilating a  
10 little bit quicker. And that itself can cause  
11 alkalosis, but then -- those are some of the physiologic  
12 changes you would see with adrenaline or with, you know,  
13 an adrenaline burst. Beyond that, it can certainly  
14 cause irregular heart beats, it can cause sudden death.  
15 One of the issues with sort of the  
16 hyperadrenaline state that Dr. Wetli was commenting on,  
17 the overdose, the reason we see in these cases when you  
18 have somebody who goes into cardiac arrest, we use our  
19 typical means of treating them, the epinephrine is the  
20 first line for asystole, it doesn't affect because their  
21 bodies are already amped out or maxed out on the  
22 adrenaline. Giving more is not going to correct the  
23 underlying issue like it would for somebody who had a  
24 cardiac arrest from a primary vascular insufficiency of  
25 the heart.

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1 fashion, what happened to Mr. Lee and what in your  
2 opinion caused him to die?  
3 A So he presents in a presentation that is very  
4 similar to other classic excited delirium deaths. He  
5 had the -- sort of the agitation, the excitability. He  
6 was certainly hyperactive, running around. He took off  
7 his clothes which is not necessarily an appropriate  
8 behavior; was sweaty, was described as having  
9 super-human strength. So he was basically having  
10 physiologic presentation of a lot of the signs and  
11 symptoms that we'd see with excited delirium. He had  
12 LSD in his system. It's not the typical medication --  
13 typical drug that we would see with it, but it certainly  
14 can cause the delusions that can also bring on more  
15 cases of excited delirium from that.  
16 He went through the typical pattern which we  
17 see as they act bizarre and irrational in public, police  
18 get called, and then there's usually some sort of a  
19 confrontation. The confrontation has no effect. We've  
20 seen people who died with just purely wrestling and  
21 handcuffing. We've seen people who die with these  
22 symptoms after pepper spray only and then handcuffing.  
23 We've seen people die with billy clubs and handcuffing.  
24 We've seen them after Taser and handcuffing. The only  
25 common thread tends to be the handcuffs which we know



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1 doesn't kill.  
2 And so the idea is that they get  
3 physiologically revved up. Their regulatory systems are  
4 not functioning the way they should, meaning that the  
5 one's own feedback that a normal physiology would have  
6 is -- the auto-regulation is not there. And so as  
7 Dr. Wetli described, the epinephrine keeps going higher,  
8 people get more agitated, more physiologically  
9 disturbed, and at some point they either get treated and  
10 get better or they have a cardiac arrest. The majority  
11 of cases tended -- there's a survival rate of probably  
12 90 percent, but the case fatality rate, the best that we  
13 can tell, based on some other work, is about 10 percent  
14 of people who go into excited delirium will have a  
15 sudden cardiac arrest and it will be virtually  
16 impossible to resuscitate.  
17 Q Okay. Now, you gave me a good description  
18 generally what happens. Now, in Patrick Lee's case, if  
19 you would take me in terms of the mechanism of death.  
20 In other words, what caused Patrick Lee to die other  
21 than these symptoms of excited delirium that you're  
22 talking about?  
23 A Well, in looking at his case specifically, he  
24 exhibited the signs and symptoms of excited delirium.  
25 His epinephrine goes higher, his heart beats faster, and

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1 arrest itself. But acidosis certainly will have an  
2 impact on somebody who had -- who was pre -- pre at risk  
3 for an event. Somebody who's already got the high  
4 epinephrine stores, somebody who has cardiomyopathy,  
5 they're already a risk -- a higher risk person. You put  
6 acidosis on top of that from drugs, you can certainly  
7 see certain cardiac deaths.  
8 Q I appreciate your explanation, but as it  
9 pertains to Patrick Lee, knowing the facts, after  
10 reading the statements and the depositions and knowing  
11 what was going on in that parking lot in terms of Taser  
12 applications, baton strikes, OC spray, what is your  
13 opinion as to whether or not Mr. Lee had metabolic  
14 acidosis prior to sustaining his -- or having his  
15 cardiac arrest?  
16 A Given his degree of excitation, agitation,  
17 running around, there's no doubt he had some acidosis.  
18 If I make you do that without drugs in your system, you  
19 would have a degree of acidosis. The -- as far as that  
20 goes.  
21 The applications of the Taser, the baton  
22 strikes, the -- the OC spray, they certainly give  
23 physiologic changes, but he has already been revved up  
24 to the point where you're not going to be adding more  
25 epinephrine to that. The drugs have already done that

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1 eventually you have a cardiac arrest, meaning the heart  
2 stops having a normal heartbeat. In his case, the first  
3 rhythm documented was idioventricular, basically a  
4 pre-death type of rhythm which is typical for a cardiac  
5 arrest. It's not of a hard etiology, but actually an  
6 exogenous etiology like acidosis or excited delirium.  
7 He was known to be acidotic after cardiac arrest.  
8 Partly that's due to the cardiac arrest and partly due  
9 to the drugs in his system and the revving up of his  
10 lactic acid. The acidosis itself can make the heart  
11 more irritable, but the acidosis itself, it was noted  
12 later, was also probably partly due to the fact that he  
13 was in cardiac arrest status which will create an  
14 acidosis in people.  
15 Q Okay. And tell me this, Dr. Vilke: In terms  
16 of the metabolic acidosis, you've seen the lab results  
17 from Vanderbilt?  
18 A Yes.  
19 Q In your opinion, did metabolic acidosis play  
20 any role in causing the cardiac arrest?  
21 A Acidosis can certainly have an impact on  
22 cardiac arrest. A significant acidosis can certainly do  
23 that. I don't know the degree of his acidosis at the  
24 time of his cardiac arrest versus how much the acidosis  
25 was subsequent and be the cause of the actual cardiac

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1 to his system. So the issue for him was taking the  
2 drugs and getting in that state of excited delirium.  
3 The subsequent involvement isn't going to increase the  
4 epinephrine stores in his body being released. They've  
5 already been released. That's what got him to that  
6 state in the first place.  
7 Q And do you know of any literature that supports  
8 that opinion that you just gave?  
9 A That --  
10 Q That he was already revved up from the LSD and  
11 that the subsequent events -- is the way I understand  
12 what you're saying -- that the subsequent events had no  
13 effect on him.  
14 A Well, the literature is case series. So we've  
15 seen certainly patients who come in with acidosis from  
16 pure drug use without significant involvements with  
17 Tasers, for example, or OC spray, and their acid base  
18 levels will be fairly disturbed without those types of  
19 external applications.  
20 There is data that shows the use of Taser does  
21 not affect pH levels specifically. And certainly there  
22 is data that shows that exertion tends to have a greater  
23 impact on subjects rather than the Taser application  
24 itself.  
25 Q Well, let's go back to LSD. Did the LSD that

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1 Patrick Lee consumed cause metabolic acidosis?  
2 A The LSD and his excitation along with that,  
3 getting him to the point -- to the point of excited  
4 delirium in concert would create that acidosis.  
5 Q And what do you mean by "and his excitation"?  
6 In other words, we got Patrick Lee in this nightclub on  
7 LSD and we know the signs and symptoms he was  
8 exhibiting. Was there any excitation while he was in  
9 the nightclub?  
10 A There could be excitation that's not  
11 necessarily exhibited. Increased heart rate, increased  
12 sweating, signs that may be subtle just by virtue of  
13 taking the drug. We'll see people who have physiologic  
14 changes but may not be running around acting crazy.  
15 That will be partially having some impact on acidosis.  
16 May not be to the degree that we saw after his running  
17 around and being more physically active, but there are  
18 typically some changes physiologically at a lower level.  
19 Q Okay. I'm not sure I understood that, Doctor.  
20 This LSD in the quantities that the lab results show  
21 Patrick Lee had, would that in and of itself cause  
22 metabolic acidosis?  
23 A The quantities are not necessarily important.  
24 It's sort of a yes or no question. So like pregnancy,  
25 either you are or you aren't. You used LSD or you

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1 Q Did you read what Dr. Nichols said in his  
2 deposition about he had researched to see how many  
3 people died of LSD, and he found very few?  
4 A I believe I recall that.  
5 Q Okay. Would you have any reason to dispute  
6 that?  
7 A Well, I didn't do, again, a specific look  
8 there. But what happens in the medical literature is  
9 when something is reported, people don't keep reporting  
10 the same thing over and over again. So if you have a  
11 case of an injury based on a certain weapon, you know, a  
12 rubber bullet, and it shows it can penetrate the skull,  
13 you're not going to see 100 of them in the case reports  
14 or the medical literature because once it's reported  
15 once or twice or three times, it's in the literature and  
16 people stop reporting it. So it doesn't give you the  
17 total number, it's just by virtue of reviewing the  
18 medical literature.  
19 Q Okay. I've read Dr. Wetli's explanation of how  
20 cocaine induces excited delirium, being a stimulant.  
21 Doctor, in your opinion, how does LSD in and of itself  
22 contribute or cause excited delirium?  
23 A It's the same pathways. It is -- it's not  
24 considered a sympathomimetic but more of a hallucinogen  
25 by category, but it has some of the effects that if you

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1 didn't, because everybody's physiology is a little bit  
2 different. So the amount in your system isn't as  
3 critical as the fact that we know he used it.  
4 When you use med -- when you use drugs of this  
5 nature, there's always some physiologic changes. And so  
6 yes, there would be some expected changes to his pH  
7 level.  
8 Q Do you know of any -- anything in the  
9 literature that would show that a person that consumed  
10 the amount of LSD that Patrick Lee had in his system  
11 ever died from the LSD alone without any kind of police  
12 confrontation?  
13 A Well, again, to the amounts, there are no  
14 studies because human subjects won't allow us to give  
15 illicit medications to college students to see what  
16 their effects are. So you'll never see a randomized  
17 trial of that nature. There's certainly case series or  
18 case reports of people who have died after LSD.  
19 Q How many people do you know of, Doctor, in the  
20 literature that have died just from taking LSD?  
21 A I don't know how many in the literature. I  
22 didn't actually go for a specific count. But it's -- if  
23 you're asking is it the common way we see people get  
24 excited delirium and die or have sudden death, no, it's  
25 not the most common, but it does happen.

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1 have a good trip, quote-unquote, or a bad trip, that can  
2 certainly create the physiologic responses that you  
3 would get from some sort of an epinephrine store.  
4 So in the sense that if I give you some LSD and  
5 you have a negative or a paranoid or sort of fall in the  
6 bad trip category, you will be a little bit more  
7 paranoid, anxious, nervous, and all that will start to  
8 build up, the revving up the symptoms that you would see  
9 with cocaine or methamphetamine.  
10 Q And getting back to what you said earlier about  
11 that the LSD in and of itself get him revved up before  
12 the confrontation -- is that what you were saying?  
13 A I don't believe I said specifically. He was  
14 having some physiologic effects of LSD prior to the  
15 conversation -- or confrontation.  
16 Q Okay. And maybe I used the word wrong. The  
17 excitation, I think. LSD plus the excitation.  
18 A Correct.  
19 Q Prior to Officer Brooks encountering -- this  
20 was the first police officer. Prior to Officer Brooks  
21 encountering Mr. Lee, did Mr. Lee exhibit any signs of  
22 excited delirium?  
23 A Signs of excited delirium. Well, obviously  
24 certainly the signs you have to actually evaluate. So  
25 for the tachycardia, obviously we wouldn't have any

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1 information on that. They had, I guess, tried to get  
2 him to take a cab and he was not necessarily receptive  
3 to that, or get him into a car or something along those  
4 lines. And that could have been consistent with some  
5 early delusional symptoms, but I can't say specifically.  
6 He certainly wasn't running around breaking windows, so  
7 he wasn't at an extreme state, but he was certainly not  
8 being cooperative. But again, that's not specific to  
9 excited delirium. So I can't say specifically he was  
10 having a classic case of excited delirium at that point,  
11 but he was certainly exhibiting signs of having some  
12 drug use.

13 Q If you had seen him in the emergency room prior  
14 to his confrontation with Officer Brooks, what would you  
15 have diagnosed him?

16 MR. BROWN: Object to the form of the question.

17 THE WITNESS: Again, just based on layperson  
18 evaluations of him, basically their testimony, the best  
19 I can say at that point was LSD intoxication or overuse.

20 BY MR. BEDNARZ, SR.:

21 Q And I take it you've seen a lot of that in the  
22 emergency room?

23 A Correct.

24 Q And you can take LSD and have these trips and  
25 act like Mr. Lee was having and not have excited

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1 delirium, correct?

2 A You can certainly have an LSD trip that does  
3 not lead to excited delirium, correct.

4 Q How would you have treated Mr. Lee prior to the  
5 confrontation with Officer Brooks?

6 MS. OLIVER: Object to the form.

7 THE WITNESS: Had the person been in excited  
8 delirium or not in excited delirium, the treatment is  
9 the same. It's typically IV hydration and medical  
10 sedation.

11 BY MR. BEDNARZ, SR.:

12 Q Doctor, in your opinion, did Mr. Lee experience  
13 rhabdomyolysis prior to having his cardiac rest?

14 A Rhabdomyolysis as in the breakdown of -- muscle  
15 breakdown. He was probably having some evidence of  
16 rhabdomyolysis even though it was not documented in the  
17 sense that you don't have a blood draw to confirm that.  
18 But with his hyperactivity, he already in all likelihood  
19 was already breaking down his muscles.

20 Q And what effect physiologically would that have  
21 on his cardiac arrest, if any?

22 A Rhabdomyolysis in general doesn't cause cardiac  
23 arrest. We see a lot of that in our jail system.

24 People who do a lot of overactivity, you're at risk for  
25 renal failure. But in the acute scenario, it typically

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1 doesn't have a major impact. It tends to be more of an  
2 over time issue.

3 Q And if you've already told me this, I  
4 apologize. If you did tell me, it went over my head.  
5 But we have Mr. Lee under the influence of LSD. Well,  
6 first of all, did marijuana, in your opinion, play any  
7 role in the excited delirium?

8 A I don't believe the marijuana did, unless it  
9 impacted his cognition with the LSD and had a  
10 combination to create that worse or paranoid thoughts.  
11 But in general, I don't give much credence to marijuana.

12 Q We have Mr. Lee under the influence of LSD,  
13 he's been pepper sprayed, he's been running around,  
14 there's been some confrontation with police, he's been  
15 Tasered. And I think we agree, as a result -- well, he  
16 has metabolic -- some metabolic acidosis at the time of  
17 the arrest?

18 MS. OLIVER: Object to the form.

19 BY MR. BEDNARZ, SR.:

20 Q Tell me what your opinion is as to the  
21 mechanism of death. In other words, why does he die and  
22 how does he die?

23 A He dies because his heart stops is the  
24 simplistic term.

25 Q Okay.

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1 A His heart in all medical probability stopped  
2 because of his -- the LSD use which created the elevated  
3 epinephrine levels, sort of the -- again, back to the  
4 excited delirium, the physiology of that, the  
5 overstimulation, the irritated heart, and you go into a  
6 sudden cardiac arrest.

7 Q Is it too simple to say his heart was beating  
8 so fast that it went into and caused some type of  
9 arrhythmia or dysrhythmia?

10 A It's not too simplistic. That's sort of where  
11 it goes, is to separate out from ventilatory or  
12 respiratory arrest which are different. So the heart is  
13 overexerted. It gets -- you don't want to say burnt out  
14 because it gives you a different vision, but basically  
15 it is overstimulated and it goes into irregular or an  
16 asystolic rhythm and ceases to function properly.

17 Q I think I understand what you're saying, but  
18 in -- I want to be sure I understand it. You've read  
19 Dr. Levy's deposition?

20 A Yes.

21 Q And I'm sure you agree that excited delirium,  
22 from a pathology viewpoint, is a diagnosis of exclusion,  
23 I think is the word that they use.

24 A That's what the pathologists say, yes.

25 Q And because they can't find another cause, then



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1 they look to the signs and symptoms of the syndrome,  
2 correct?  
3 A Correct.  
4 Q And do all people that are on cocaine or LSD  
5 that have excited delirium die of the same mechanism?  
6 In other words, does it always work the same way?  
7 A So those who die, okay, again, the ones who die  
8 with excited delirium, there can be other confounders.  
9 Sometimes people have sickle cell disease, some -- many  
10 of them have cardiomyopathy, the enlarged heart which  
11 puts them at increased risk. There can always be other  
12 confounders, but the reality is the mechanism is  
13 basically the same. They get revved up or amped up,  
14 hyperstimulated, the heart is -- again, nobody is  
15 watching the heart specifically, but the theory is that  
16 the heart is overstimulated with the epinephrine, the  
17 adrenaline stores, and has a sudden either dysrhythmia  
18 or arrhythmia that occurs.  
19 Q And it's my understanding that you can't detect  
20 that on autopsy; is that your understanding?  
21 A That's my understanding.  
22 Q Okay. And I'm still trying to understand this,  
23 Doctor, because I'm trying to understand your opinions.  
24 And I've read the literature. I've actually read both  
25 books here, and I've read a bunch of the other

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1 for the chest pain, the ischemia, the symptoms of angina  
2 or sudden death, the Jim Fixx phenomenon. You know,  
3 first time you have a -- no flow to that heart and you  
4 die or you have a cardiac arrest. That's the population  
5 that if you get early epinephrine, early defibrillation  
6 does, actually, relatively well. Then we take you to  
7 the hospital and fix your lesion.  
8 The population with excited delirium is a  
9 little different. Sometimes they do have significant  
10 cardiovascular or atherosclerotic disease, sometimes  
11 they don't. So back to some of the confounders I talked  
12 about earlier. Many of them have cardiomyopathy from  
13 their drug use in general, which it then is just a heart  
14 that's prone, compared to somebody who has not have  
15 cardiomyopathy, to have electrical dysfunction that can  
16 cause sudden death.  
17 The excitement, the increase in the heart rate,  
18 the epinephrine, the drugs themselves all have direct  
19 impact on that heart muscle. It may not be a lack of  
20 flow, say, from atherosclerotic disease, but you can get  
21 vascular spasm, you can get still the increased oxygen  
22 demands, and then just a change in that oxygen ability  
23 to get there on a large -- enlarged  
24 at-risk-for-irritability heart then can put you into a  
25 sudden cardiac arrest.

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1 literature, and I'm trying to understand the mechanism  
2 of death from a lay viewpoint. I jog. I'll give you an  
3 example and then I've got a question that follows up.  
4 And although I think I've got a good heart, I've been  
5 told don't get that heart rate too fast. Get it up over  
6 150, 160, you're pushing it and you're at increased  
7 risk, I guess because of my age. Am I getting good  
8 advice when someone tells me that?  
9 A Well, the concept, there's -- you're looking at  
10 two similar but not exactly the same mechanisms.  
11 Q And that's what I'm trying to understand.  
12 A So if I take your heart and assume that you've  
13 had a few cheeseburgers over your lifetime --  
14 Q I've had a lot of them.  
15 A -- you probably have some cardiovascular  
16 disease, narrowed vessels there. As you exercise more,  
17 your demands for your heart go up. The oxygen demands  
18 go up. They need more -- needs more oxygen, needs more  
19 metabolic products to keep a good normal beat. As  
20 you're exercising more, your vessels aren't any wider  
21 than they started. They can only get so much flow  
22 through them. So say you have a 50-percent decrease in  
23 your diameter than you did when you were 30, you're  
24 exercising to a heart rate of 160, 170, your demands go  
25 up, you can't get the flow there, then you're at risk

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1 The typical difference is, for your heart, the  
2 most common rhythms of ventricular fibrillation arrest,  
3 which is why we shock you, we give you epinephrine and  
4 you have a decent shot of coming back and living for  
5 another day. This group here tends to go into asystole  
6 or a ventricular type of rhythm rather than a  
7 ventricular fibrillation type rhythm, and those are much  
8 harder to resuscitate, probably because they've already  
9 gotten all that epinephrine on board, there's nothing  
10 additional to give. They've already really worked that  
11 heart to the limit, and when it stops, it's -- there's  
12 no place to reset it.  
13 Q And what I'm getting at is, if my brain isn't  
14 working telling me to slow down and I keep running at a  
15 fast pace, faster than my heart can tolerate, I'm  
16 obviously not going to be able to produce enough oxygen,  
17 correct?  
18 A Yeah, given the underlying physiology.  
19 Q In other words, if I can override my brain  
20 mechanism and I keep running in spite of all of the  
21 feedback, will I die the same way as Patrick Lee died?  
22 A Back to if you are running and you're creating  
23 a lot of -- if it's just purely your heart, you're  
24 outstripping your heart's blood supply, your body will  
25 put you into a V-fib arrest. You'll cease your blood

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1 flow to your brain, and then you'll go down with the  
2 same ventricular fibrillation arrest you would have had  
3 your brain been giving you that feedback. Because your  
4 underlying mechanism -- your underlying heart disease is  
5 what's your limiting factor. Your -- meaning your heart  
6 is not seeing high epinephrine stores. You haven't  
7 amped that up with drugs, you haven't amped that up  
8 necessarily with a monster lactic acidosis before --  
9 before you get to that stage, your heart would have  
10 already outstripped its ability to get blood flow  
11 supplies so you would have the same ventricular  
12 fibrillation classic ischemic cardiac arrest.

13 Q Okay. And is that any different than what  
14 happened to Patrick Lee, other than what caused it?

15 A Well, clearly his issue isn't from narrowed  
16 vessels getting low blood flow to the heart because of a  
17 lesion to a particular part of the heart that is now  
18 more irritable to get the rhythm. He has amped up his  
19 epinephrine stores. He has created a component of  
20 acidosis with his use of the drug itself plus the  
21 activity. And on a cardiomyopic -- cardiomyopathic  
22 heart, a big enlarged heart, he has gone -- he has gone  
23 to an asystolic arrest which is different than the  
24 ventricular fib arrest.

25 Q Do we have any documented evidence that it was

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1 should stop now, at a heart rate of 150, say. And you  
2 are now creating a scenario where you can override your  
3 brain's -- or your body's feedback to you and say, I can  
4 go past 150 to 160 to 170. When you hit that part, you  
5 would normally be feeling the chest pain.

6 Your body would normally tell you to stop  
7 running. What would end up happening is then you would  
8 just push it a little bit further to the point where  
9 your body would -- your heart would say, boom, I'm not  
10 getting the flow, and go into a VF arrest. It's not --  
11 you haven't created the acidosis phenomenon. You  
12 haven't created -- you don't have the underlying drugs  
13 there. You haven't created an irregular heart. You  
14 have basically just facilitated your natural cardio  
15 atherosclerotic disease and pushed it to the part where  
16 it's, again, back to the Jim Fixx phenomenon. You know,  
17 had a single area and had a sudden death. It was just  
18 that type of thing rather than overriding something and  
19 keep pushing forward.

20 Q Now, you mentioned ventricular fibrillation.  
21 Is that the same as an arrhythmia?

22 A Arrhythmia is an absence of rhythm. So an  
23 arrhythmia classically is asystole. Dysrhythmia is an  
24 irregular rhythm.

25 Q It's my understanding that as many as a third

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1 asystole as opposed to ventricular fibrillation?

2 A The only documentation is the first arrival --

3 THE REPORTER: Excuse me, the only --

4 THE WITNESS: Documentation is the first  
5 arrival of the paramedics, and they found an  
6 idioventricular rhythm. An idioventricular rhythm,  
7 which is essentially asystole with a few leftover beats  
8 in there, certainly was not ventricular fibrillation.

9 Typically VF, ventricular fibrillation, does not  
10 degenerate that quickly. If it does degenerate, it  
11 usually goes to pure flat line, not idioventricular. So  
12 there isn't any evidence that it was originally a VF  
13 arrest.

14 BY MR. BEDNARZ, SR.:

15 Q And again, this is a hypothetical, but if I'm  
16 able to override my body's responses and I keep running  
17 and that heart rate gets up to 180 to 190 or whatever,  
18 can I go into asystole without having a ventricular  
19 fibrillation?

20 A Well, again, just because you can override your  
21 body's system to keep exercising, if you were -- if  
22 your -- say your body has the physiology of 75 percent  
23 stenotic lesions and you were destined to outstrip your  
24 oxygen supply to the point where you would get chest  
25 pain, then your normal brain would tell you, I think I

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1 of the people that die of cardiovascular disease --  
2 which is I guess what you say I'd die from if I  
3 overexerted.

4 A Yes.

5 Q One-third of them don't have any chest pain.  
6 Is that true?

7 A I don't know the exact statistics, but a lot of  
8 people have their first diagnosis of coronary disease  
9 based on sudden cardiac arrest.

10 Q Okay. I guess it's too simple to say that a  
11 person with excited delirium just keeps getting one  
12 insult after another, be it drugs or whatever else,  
13 until the point that the heart beats so fast it just --  
14 it just loses it?

15 MS. OLIVER: Object to the form.

16 THE WITNESS: In my simplistic nature of  
17 looking at it, I look at it as you have, overrevved up  
18 your system. Take your car and you run the engine too  
19 hot for a period of time, it will seize and lock up, and  
20 the body can be the same way.

21 BY MR. BEDNARZ, SR.:

22 Q And are we talking about the cardiovascular  
23 system itself? I mean, is that what's revved up so  
24 high?

25 A Well, the entire body is revved up, the whole

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1 flight or fight, paranoia, delusional stuff. But the  
2 part that tends to falter is the -- well, falter to the  
3 point where you die is the heart.  
4 Q I still don't understand it fully, but you've  
5 done a good job helping me understand your opinion  
6 somewhat.

7 You mentioned earlier that there is a  
8 10-percent survival rate of people that are diagnosed  
9 with -- or people that have signs and symptoms of  
10 excited delirium?

11 MS. OLIVER: Object to the form. I think you  
12 got it backwards, Joe.

13 MR. BEDNARZ, SR.: Okay. Oh, I'm sorry.  
14 You're exactly right. It's 90 percent survival rate.

15 THE WITNESS: Best guess. Of those who present  
16 to medical, get to medical care, and this is based on a  
17 single study of paramedic data of patients who present  
18 with excited delirium, that about 10, 11 percent will  
19 have a sudden cardiac event. There are certainly -- and  
20 I do want to be clear, there's not a big database out  
21 there. There's not a way of prospectively studying  
22 these patients because they pop up here and there. But  
23 to the best knowledge, about 10 percent will have a  
24 sudden event after exhibiting signs of excited delirium.  
25 //

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1 unrevivable.

2 Q Have you had any of them die after being  
3 sedated?

4 A I have not had any die after being sedated.  
5 They were in the process of being -- well, the field  
6 ones were not. The one in the E.D. was -- we were  
7 attempting to sedate, but at that point it did not work.  
8 So they were in the process of.

9 Q I'm trying to recall what Dr. Ho's testimony  
10 was. Have you been -- first of all, have you seen  
11 Dr. Ho's testimony in this case?

12 A I have not seen his testimony.

13 Q Have you been briefed on it?

14 A I have not.

15 Q There was an estimate, I believe, that maybe  
16 one out of 200 people that arrive in an emergency -- and  
17 I could be wrong here, Doctor, so I want to preface  
18 that. But it's my recollection that there was some  
19 testimony that approximately one out of 200 will die  
20 after they arrive in emergency room. And that would be  
21 significantly different than the 10-percent survival  
22 rate that you've referred to. Would you have any reason  
23 to dispute that kind of an estimate?

24 MS. OLIVER: Object to the form.

25 THE WITNESS: I'm assuming you're referring to

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1 BY MR. BEDNARZ, SR.:

2 Q And what specifically is that paramedic data  
3 that you just referred to?

4 A That's a study by Stratton.

5 Q Study by --

6 A Sam Stratton, yes.

7 Q How many people have you seen over your career,  
8 Doctor, in the emergency room that had what you would  
9 consider to be excited delirium?

10 A Symptoms, probably -- probably fairly a  
11 dozen -- about several dozen of them over the career.

12 Q Several dozen?

13 A Uh-huh.

14 Q How many of those have died?

15 A A few. Probably a few. Probably about  
16 10 percent, but I don't have an exact count for you.

17 Q And were these people that died, had they  
18 already been revived or are you able to in any way  
19 quantify that?

20 A Those -- we had one die in the emergency  
21 department who was just revved up like I described, died  
22 despite having all the great wonderful medical care  
23 there and not having any other insults. And then a  
24 number of them -- the other ones who have died have come  
25 in by paramedic at the time in cardiac arrest and were

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1 one out of 200 subjects exhibiting signs and symptoms of  
2 excited delirium?

3 BY MR. BEDNARZ, SR.:

4 Q That make it to the emergency room alive, only  
5 one out of 200 would die.

6 A Depending on the system, obviously it's --  
7 meaning that nowadays we see fewer than I did years ago  
8 because we have a more aggressive pronouncement of death  
9 in the field. If they are dead, they are dead.

10 Bringing them to the emergency department doesn't  
11 improve survival rates. So I would not be surprised  
12 if -- or certainly could be feasible that those who are  
13 in the process of having their cardiac arrests would be  
14 resuscitated as best they could in the field and they  
15 didn't return spontaneous circulation would be  
16 pronounced and never brought in to be seen by Dr. Ho.

17 So that could certainly be the case for their system.  
18 Q Doctor, in your opinion, and I'm talking about  
19 Patrick Lee now -- first of all, what is your opinion as  
20 to the number of effective applications of Taser --  
21 terrible. I worded that -- I got confused. Strike that  
22 whole line.

23 In your opinion -- first of all, do you have an  
24 opinion as to how many Taser applications were  
25 effective?

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1 A And effective, I assume you mean by becoming --  
2 developing a neuromuscular dissociation --  
3 Q Yes.  
4 A -- that the intent is. Neuromuscular  
5 dissociation.  
6 Certainly fewer than 19, as far as that goes,  
7 because based on descriptions, not all of them had  
8 impact on him. But to a specific number, I certainly  
9 don't want to be held to a specific number, but it's  
10 probably -- not much fewer, but a number fewer than 19.  
11 And obviously there was also some drives done that would  
12 also be listed in that 19. So it would be even -- it  
13 would be lower than that.  
14 Q Okay. Going back to Officer Brooks, the first  
15 confrontation -- first of all, do you know of any  
16 testimony, any evidence that Mr. Lee was ever aggressive  
17 toward the police officers?  
18 MS. OLIVER: Object to the form.  
19 THE WITNESS: I have recall of some aggressive  
20 stances. I don't know of anything -- you know, sort of  
21 aggression is an evaluation by the police officer at the  
22 time, as far as that goes. But there's some  
23 certainly -- what I recall, some aggressive stances and  
24 that type of behavior, but I don't recall of any --  
25 anything beyond that right now.

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1 BY MR. BEDNARZ, SR.:  
2 Q In terms of the literature, I see where  
3 combative and violent behavior is one of those symptoms.  
4 A Can be.  
5 Q And I guess what I'm asking, Doctor, in terms  
6 of Patrick Lee, do you know of any combative or violent  
7 behavior on his part?  
8 A I'm trying to think back to the depositions.  
9 He was certainly -- again, I recall the aggressiveness.  
10 I don't recall him -- I recall some swinging, but again,  
11 that's during the interaction so, of course, anybody  
12 could say, well, wouldn't you do the same thing. But  
13 again, it's not required that you be combative or  
14 violent.  
15 So the delusional component, people will  
16 respond differently. Some people are deluded and  
17 paranoid and try to get away, try to break things, try  
18 to go after lights. Some are aggressive towards people.  
19 So it's not a --  
20 Q And where I'm coming from, Dr. Vilke, I'm  
21 trying to understand how you can make a diagnosis of  
22 excited delirium when we know he's on LSD, and LSD in  
23 and of itself is going to cause him or could cause him  
24 to have some of these symptoms, correct?  
25 A Correct.

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1 BY MR. BEDNARZ, SR.:  
2 Q In terms of excited delirium, is there a  
3 general pattern as to whether or not a person suffering  
4 from excited delirium would actually attack people  
5 around them?  
6 A There -- just like I described earlier, it's a  
7 syndrome of symptoms. So some people will be aggressive  
8 towards those, some people will be paranoid and  
9 delusional and be running away from others. So the  
10 pattern is not consistent.  
11 Q Okay. Of all of these various -- I guess you  
12 refer to them as symptoms?  
13 A Symptoms.  
14 Q Is that correct? Is there a certain minimum  
15 number you must have to arrive at a diagnosis of excited  
16 delirium?  
17 A There is not.  
18 Q You certainly need more than one?  
19 MS. OLIVER: Object to the form.  
20 THE WITNESS: You're absolutely right. Just  
21 having an elevated temperature can be flu versus excited  
22 delirium. You have to have more than that, and you have  
23 to have the circumstances that would be consistent with  
24 it.  
25 //

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1 Q And how do you -- how do you assign one to LSD  
2 and then one to excited delirium?  
3 A That's a great question. LSD, you can have  
4 good trips and you can have bad trips. Certainly the  
5 good trips, they are much more mellow and happy and  
6 joyful. The bad trips can be very paranoid, as you've  
7 already noted with excited delirium. And it's a matter  
8 of degree. It's not -- you know, some bad trips will  
9 cause people to do things that will harm themselves, and  
10 that's fine, but then you start getting the other  
11 symptoms of the sweatiness, the not following commands,  
12 the getting wild and super-human strength, the  
13 undressing, those are beyond typical LSD bad trips and  
14 moving to the sort of the continuum of excited delirium.  
15 Q Prior to the police arriving, did you see any  
16 evidence that he was having a bad trip or a good trip?  
17 A He was, I believe, repetitively not following  
18 directions to stay off the stage, so he was certainly  
19 not having a directional trip. He was certainly having  
20 some signs of -- whether it was good or bad that he was  
21 moving that direction, I can't say per se, but he  
22 certainly was having the impact of LSD.  
23 Q Well, as I understand some of the description  
24 of the delirium brought on by excited delirium,  
25 disoriented, is that one of them?



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1 A That can be.  
2 Q Disorganized?  
3 A That can be.  
4 Q Hallucinations?  
5 A Yes.  
6 Q Speech disturbances?  
7 A Yes.  
8 Q Misidentification?  
9 A Yes.  
10 Q Would you agree that all of those signs could  
11 be caused by LSD intoxication?  
12 A They certainly could be.  
13 Q When you see someone in the emergency room and  
14 they're having these symptoms or that's being described  
15 to you, what else is in your differential diagnosis?  
16 A For somebody who is disoriented, disorganized,  
17 confused, is that the question?  
18 Q Bad question. Let me just go back up.  
19 A person like Patrick Lee who has all of these  
20 signs and symptoms that you have now used to diagnose  
21 him with excited delirium, if he hadn't died and he was  
22 there, what else would be in your differential  
23 diagnosis?  
24 A Well, again, excited delirium, I look into it  
25 as a continuum of the drug use. So for LSD

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1 initial confrontation, from the LSD alone, is it your  
2 opinion that he had some excitation at the time  
3 Officer Brooks was questioning him?  
4 A From the LSD?  
5 Q Yes.  
6 A Well, the LSD, again, on the continuum there,  
7 he probably had a combination of pure LSD intoxication  
8 but was already starting to exhibit the signs like I  
9 described of going to excited delirium.  
10 Q What other signs did he exhibit at the time of  
11 the confrontation with Officer Brooks that would  
12 indicate excited delirium?  
13 A The -- again, the sort of the agitation, not  
14 just sort of sitting there conversing or being mellow.  
15 Starting to get agitated up. The description of just  
16 sort of being more an aggressive stance, that type of  
17 thing.  
18 Q Anything else?  
19 A I'm trying to recall back to the testimony, and  
20 I'm having some difficulty remembering specifics --  
21 specific words that were used. But basically the  
22 presentation, the way it was described, at the time I  
23 read it, sounded more like excited delirium.  
24 Q In terms of the excitation, once Officer Brooks  
25 sprayed him, what effect did the spray have on his

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1 specifically, since that's the drug involved in this  
2 case, it could be a very mild, happy lay in the corner  
3 and just have fantasies of colors and that's great. Not  
4 a big deal. Probably went into the emergency  
5 department. Then they can be a little bit more nervous  
6 or paranoid and friends may bring them in there. They  
7 may be tachycardic, they may not be. They may be having  
8 elevated blood pressure, they may not be. They may not  
9 be disoriented, they may be a little more nervous and  
10 confused about things, and then that can go a little bit  
11 higher.  
12 And then when you start getting the symptoms of  
13 the sweatiness, the extreme agitation, the lack of  
14 following direction -- we say, "Stay in your bed, stay  
15 in your gurney," they keep getting up and not following  
16 that, to the point where we have to have security come  
17 in there, then they're pushing that border of being  
18 diagnosed with early stages of excited delirium. And  
19 that can either progress, or typically at that point  
20 we'd heavily sedate them to try to break that cycle.  
21 And so if we didn't treat them, they would in all  
22 likelihood continue to escalate up, and then they fall  
23 into that category of full significant excited delirium  
24 and be at risk for sudden cardiac death.  
25 Q And going back to Officer Brooks and the

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1 excitation?  
2 A Well, pepper spray in itself can have an  
3 excitatory -- excitatory effect. But it can also, you  
4 know, continue to create or continue to -- shouldn't say  
5 "continue." It can have either some impact or no impact  
6 on the way they physiologically respond. But as far as  
7 somebody who is already on a projected level of  
8 increasing excitation, it's not going to impact that.  
9 Q I need to understand what your opinion is. We  
10 have the lay witnesses who have described his behavior  
11 prior to Officer Brooks spraying. And my opinion -- my  
12 question is, what is your opinion -- first of all --  
13 scratch that.  
14 This -- I'm having trouble using this word.  
15 Excitatory effect?  
16 A Excitatory.  
17 Q Excitatory. Okay. What exactly is that? Is  
18 that an increase in heart rate?  
19 A It's an increase of symptoms of -- I guess of  
20 stress to some degree.  
21 Q Okay. And would that include an increase in  
22 heart rate?  
23 A It can.  
24 Q Would that include an increase in adrenaline?  
25 A It can if there is room for doing that still.

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1 I mean, if your heart rate's already maxed out, to do  
2 anything else is not going to increase your heart rate.  
3 But if I sprayed you with pepper spray right now, you  
4 would probably have an increase in heart rate, an  
5 increase in sort of the markers of stress. But if  
6 you're already completely -- already increased on that  
7 from underlying sources, it may have no impact at all as  
8 far as those physiologic changes.  
9 Q Surely, Dr. Vilke, you're not saying that he  
10 was already maxed out prior to being pepper sprayed by  
11 Officer Brooks?  
12 A But he certainly may have been tachycardic. He  
13 certainly may have been with an elevated blood pressure.  
14 He certainly, you know, may have been having some of the  
15 physiologic symptoms of the effects of adrenaline.  
16 Q And my question really is, in your opinion,  
17 what effect did -- in terms of more probable than not,  
18 what effect did the OC spray have on this tachycardia  
19 or -- I'm having trouble with this -- excitatory effect?  
20 A Certainly there seemed to be some response by  
21 him to the OC spray, a normal physiologic response. It  
22 certainly isn't going to change the underlying direction  
23 that the LSD had already been started on, but it  
24 certainly can create an elevation in rate heart at that  
25 time or a little bit of a degree of irritation just like

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1 A In general, they will either feel pain or  
2 burning or be disoriented because of the spray being in  
3 the eyes.  
4 Q Do you have any evidence at all that he did not  
5 experience pain when he was first sprayed by Officer  
6 Brooks?  
7 A That he did not experience pain. Meaning  
8 that -- your original question was, does the scream mean  
9 he has pain. My answer was not necessarily, but in all  
10 likelihood the scream did indicate that he was  
11 effectively -- effectively impacted by the OC spray.  
12 Q And if Officer Brooks said that when he sprayed  
13 him, Mr. Lee screamed as if the pepper spray was  
14 painful, would you have any reason to disagree with  
15 that?  
16 A I would not disagree with that.  
17 MR. BEDNARZ, JR.: Is this a good place for a  
18 break?  
19 MR. BEDNARZ, SR.: Yes.  
20 THE VIDEOGRAPHER: Going off the record, the  
21 time is 10:31 a.m.  
22 (Recess.)  
23 THE VIDEOGRAPHER: We are back on the record.  
24 The time is 10:43 a.m.  
25 //

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1 a baton strike could or any other noxious stimuli.  
2 Q Doctor, did he scream and then run away from  
3 Officer Brooks after being sprayed?  
4 A I can't recall the scream part, but I know he  
5 did run away, yes.  
6 Q Assume, if you will, that the witnesses say he  
7 screamed and he ran away. Would that indicate to you  
8 that he was experiencing pain?  
9 MS. OLIVER: Object to the form.  
10 THE WITNESS: It can be. It doesn't mean it  
11 was. A scream of pain versus if you have somebody who  
12 is delusional or paranoid, certain impact things can  
13 make you feel different -- different signs and symptoms.  
14 Meaning we don't know what's going on in his brain. He  
15 could have taken the fact that he got hit with something  
16 as a cloud to his face. A certain percentage of people  
17 will not have any effect by OC in general. Could have  
18 taken that as some sort of alien life form attacking him  
19 and creating a paranoid feeling. So the scream doesn't  
20 necessarily mean pain only, it means he has -- he  
21 recognized the pepper spray did impact him.  
22 BY MR. BEDNARZ, SR.:  
23 Q In individuals that are not high on LSD or  
24 experiencing excited delirium, when sprayed in the face  
25 and in the eyes, do they usually feel pain?

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1 BY MR. BEDNARZ, SR.:  
2 Q Dr. Vilke, I'm trying to understand your  
3 opinion, so I'm kind of leading up chronologically now  
4 from the time Officer Brooks arrived. And you have used  
5 the term "excitation" several times, and I think --  
6 you've even explained it. But I still don't understand  
7 it, so would you help me out here? In other words, I  
8 know your opinion that he was on LSD, and LSD in and of  
9 itself was causing him to be in some kind of an excited  
10 state.  
11 MS. OLIVER: Object to the form.  
12 BY MR. BEDNARZ, SR.:  
13 Q Correct?  
14 A LSD can cause that, and it's again, a continuum  
15 to and towards excited delirium. So typically they --  
16 there can be the mellow, the bad trip, the good trips  
17 and all that, but when you start getting the more  
18 hyperactive responses and the more crazy wild running  
19 around type of things, that's where you're bordering  
20 from sort of an LSD intoxication to excited delirium.  
21 Q Okay. And that's what I'm trying to run  
22 around. But when we talk about Mr. Lee's condition, at  
23 the time Officer Brooks confronts him, what excitation  
24 did he have in your opinion? What evidence of  
25 excitation?

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1 A Just again, sort of what I'm recalling from the  
2 testimony before from Officer Brooks was for the  
3 aggressive stance, the excitement that was demonstrated  
4 even inside the club where he was asked repeatedly not  
5 to go to the stage. Sort of the not following  
6 directions, not thinking clearly or looking towards the  
7 ramifications of his actions. And I can't remember if  
8 he was -- if he was sweaty at that point or not. That  
9 may have been impact there as well.  
10 Q And maybe this is where I'm having trouble  
11 understanding you, is I understand what delirium is from  
12 the medical description. If a layperson can understand  
13 it, I've read about it. And then we throw in the word  
14 "excited" delirium. What I'm interested in is the  
15 physiological responses that Mr. Lee was having. So  
16 when I talk about how did something affect him, I'm  
17 really talking about physiologically.  
18 So physiologically, what would be your opinion  
19 as to the state of excitation? I mean, do you use  
20 excitation in terms of the physiological excitation of  
21 the body?  
22 A It can be used that way.  
23 Q Okay. Any evidence of increased heart rate?  
24 A Again, nobody was checking a pulse, so that  
25 part is hard to determine.

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1 MR. BROWN: What does "inappropriate" mean, I  
2 guess would be my concern.  
3 THE WITNESS: He took his pants off which would  
4 be considered socially inappropriate. He was not  
5 following commands from police officers, so that would  
6 be considered inappropriate. Typically if you get a  
7 good painful effective spray from pepper spray in the  
8 face or the eyes, if it works, it's fairly  
9 incapacitating since you can't see what you're doing.  
10 You know, you should -- many people will -- if I spray  
11 you, you would probably stop what you're doing, just  
12 cover your eyes, try to rub them, clear them out, say,  
13 "Don't do it again, don't do it again."  
14 When somebody is exhibiting signs that are more  
15 excitatory, use the term there, or inappropriate or even  
16 delusional, they will sort of use that incapacitation  
17 and become more disruptive rather than more compliant.  
18 So they -- so somebody who is normally thinking, well,  
19 who is not delusional will tend to be more of, you know,  
20 police tell you don't move, sit still, hold down,  
21 they'll do that because they can't see. But if you're  
22 not thinking clearly, you're inappropriate, then -- then  
23 you may continue to fight or be aggressive.  
24 BY MR. BEDNARZ, SR.:  
25 Q If -- I want you to assume -- now, you know one

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1 Q Okay. Fair to say there was no evidence of it?  
2 MS. OLIVER: Object to the form.  
3 THE WITNESS: Again, if he -- jitteriness or  
4 moving around there would lead one to think that, but  
5 there's no direct measurement of heart rate.  
6 BY MR. BEDNARZ, SR.:  
7 Q Do you have an opinion as to whether or not he  
8 had any metabolic acidosis at that time?  
9 A He probably had some degree of acidosis just  
10 based on the LSD use, but not a significant acidosis.  
11 He may have been starting.  
12 Q Okay. And then you used the word "crazy wild  
13 behavior" or something after this. Didn't you just use  
14 that a minute ago?  
15 A You wrote it down, so I probably said it  
16 somewhere regarding to the activity that we'll sometimes  
17 see with excited delirium.  
18 Q When Officer Brooks sprayed him in the face,  
19 and assuming he screamed and ran, would that be  
20 inappropriate for a person to run when they get sprayed?  
21 A No.  
22 Q Then he's in the parking lot before the Taser  
23 is applied to him. What inappropriate behavior prior to  
24 being Tased did Mr. Lee exhibit?  
25 MS. OLIVER: Object to the form.

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1 of the witnesses -- one of the statements of one of the  
2 witnesses describes the clothes, even the shirt coming  
3 off after the spray, correct?  
4 A I believe -- I know -- I remember the pants and  
5 the shirt.  
6 Q And there was some people that had it  
7 differently.  
8 A Correct.  
9 Q If -- I want you to assume for the purpose of  
10 this question -- if Mr. Lee didn't take off any clothes  
11 until after he was sprayed, would that be a sign of  
12 excited delirium?  
13 A If he didn't take off any clothes until after  
14 being sprayed?  
15 Q Yes.  
16 A Well, the taking off the clothes with or  
17 without the spray is certainly a sign of excited  
18 delirium.  
19 Q Would it be inconsistent for a person that  
20 didn't have excited delirium to get pepper sprayed and  
21 then want to get the clothes off?  
22 A The experience I've had with the pepper spray  
23 is people try to rub their eyes. If they get sprayed in  
24 the face, they try to clear their eyes.  
25 Q In your reading of the statements and the

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1 depositions, how many times was Mr. Lee sprayed?  
2 A I'm trying to remember specifically. It  
3 certainly was -- I think -- trying to remember. It's, I  
4 believe, three times, but I'd have to --  
5 Q As I read it, and I had trouble separating from  
6 the police officers, I read it as either three or maybe  
7 even four times, if you add up what all the police  
8 officers say. Regardless which it was, would you agree  
9 that each application of the spray increased his  
10 excitation?  
11 A I wouldn't agreed with that.  
12 Q Why not?  
13 A If he's already been impacted by the OC in the  
14 face with the first spray, the subsequent sprays likely  
15 didn't have any more impact on his nerve stimulation.  
16 Q And what do you base that on, Doctor?  
17 A My own experience in being pepper sprayed  
18 repeatedly.  
19 Q And -- well, can you explain that a little bit  
20 more?  
21 A Sure. I mean, I've been sprayed as part of  
22 research, and when you get subsequent -- when it's  
23 already burning, more spray doesn't have an additive  
24 effect. The first round is still burning. So adding  
25 more to it, while the first one is effective, doesn't

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1 or something to that effect. I can point it out for you  
2 if you'd like.  
3 BY MR. BEDNARZ, SR.:  
4 Q Yeah, before it's over I'll get you to.  
5 Now, when you were sprayed the second time,  
6 could you tell you'd been sprayed again?  
7 A You feel the effect of the liquid, but it -- it  
8 was already -- they were rapid successions, and so it  
9 was basically the impact was the one and the second one  
10 and the third one. There was no -- it wasn't long gaps.  
11 I hadn't cleared out my face, got my eyes opened up and  
12 washed everything out and then got sprayed again. It  
13 was, I got sprayed and then rubbing, get sprayed again,  
14 rubbing, get sprayed again.  
15 Q How much time in between?  
16 A It was less than 30 seconds.  
17 Q Was the next application -- could you feel it?  
18 Was it more painful? In other words, did it increase  
19 the level of your pain at the time it was sprayed?  
20 A I didn't -- I did not note an increased level  
21 of pain. It was still painful from the first one.  
22 Q But based on that study, it would be your  
23 opinion that the additional applications of OC spray had  
24 no physiological effect on Mr. Lee?  
25 A Based on my experience. The study did not do

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1 increase the symptoms; the symptoms are already there  
2 from the first application.  
3 Q Tell me on the first application, Doctor, was  
4 it painful?  
5 A For me?  
6 Q Yes.  
7 A Yes.  
8 Q Did it increase your heart rate?  
9 A I did not check it, but in all likelihood there  
10 was some impact, even before they pulled the -- pulled  
11 the spray bottle on me.  
12 Q Okay. Was this a study that was conducted  
13 specifically?  
14 A It was in preparation for a study. So I wanted  
15 to feel the impact of what I'll be studying on police  
16 officers.  
17 Q Was it involved in a case involving litigation?  
18 A No.  
19 Q Was this study ever published?  
20 A Yes, it was.  
21 Q And what's the name of that study?  
22 A It's in my C.V. "The Effect of Oleoresin  
23 Capsicum on Human Subjects."  
24 THE REPORTER: The effect of --  
25 THE WITNESS: OC spray on -- on human subjects

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1 repeated applications. So based on my own experience,  
2 we -- I would say that subsequent applications do not  
3 necessarily increase pain thresholds because the pain  
4 was already there from the first application.  
5 Q Did they impair your breathing in any way?  
6 A It made me cough a little bit, but it did not  
7 impact my ability to get air in.  
8 Q Had you been exercising prior to being sprayed?  
9 A I had not.  
10 Q In any event, I just want to know what your  
11 opinion is, and I think you've told me that in your  
12 opinion, these additional OC sprays had no physiological  
13 effect on Mr. Lee?  
14 A Or no or very minimal, if any.  
15 Q Okay. The baton strikes, do you have an  
16 opinion, based on your reading of the literature, how  
17 many times he was hit with the baton?  
18 A I didn't really try to go through and count how  
19 many times he was struck.  
20 Q Okay. Do you have an opinion as to what  
21 effect, if any, baton strikes have on this excitation?  
22 A With all the other events going on, with the  
23 pepper spray, with the running around, with the Taser  
24 applications, the baton strikes themselves probably had  
25 no significant impact on his physiology.



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1 Q Do you know of any peer-reviewed studies that  
2 would support that opinion, Doctor?  
3 A Well, there again, there's no peer-reviewed  
4 studies on people who are intoxicated with drugs who  
5 then subsequently have baton strikes, so there's never  
6 going to be a research project that will evaluate that  
7 specific scenario.  
8 Q Let's take away the drugs. Would it be your  
9 testimony that repeated strikes with a baton strike  
10 would not increase an individual's adrenaline flow,  
11 whether or not they were on drugs?  
12 A So it's a hypothetical.  
13 Q Yes.  
14 A You're taking a person like you and I hit you  
15 with a baton, you will -- you will have some physiologic  
16 changes.  
17 Q Okay. And the more you hit me, the more  
18 physiologic effects you would expect me to feel?  
19 A To some degree, depending on where and how much  
20 and how often.  
21 Q Okay. Then why not, in Mr. Lee's case, why  
22 wouldn't he be feeling the effects, the cumulative  
23 effects of baton strikes?  
24 A I didn't say he wouldn't be feeling effects.  
25 Q Okay.

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1 because we haven't measured it, but to add a -- it was  
2 pepper spray, we know that, that probably caused, we  
3 talked, some pain. To add another painful stimuli in  
4 somebody who isn't under those physiologic conditions  
5 would have an impact in the sense of increasing heart  
6 rate, like you, but somebody whose heart rate is already  
7 elevated is unlikely to have any physiologic change or  
8 impact on that. If your heart rate's already 180,  
9 hitting you with a baton isn't likely to make it go to  
10 181, 182, 185. It's probably going to be whatever that  
11 is. Again, using 180 as a theoretical or, you know,  
12 hypothesis type thing.  
13 Q When we say that, using the words "revved  
14 up" -- let's just assume for the purpose of this  
15 question he's at 180 and you have additional baton  
16 strikes or pepper sprays. And it would be your opinion  
17 it wouldn't have any effect or minimal effect?  
18 A Physiologically. He would be unlikely to  
19 change his heart rate, it would be unlikely to change  
20 his blood pressure. He may or may not be feeling the  
21 painful stimuli, but unlikely to physiologically change  
22 him.  
23 Q And why is that?  
24 A The body can only go so far up, you know, when  
25 he's already getting the underlying revved-up effects.

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1 A He may feel a baton strike, but it may not have  
2 any physiologic impact based on the fact he's already  
3 been pepper sprayed, he's already on drugs, he's already  
4 revved up and running around, that you'd unlikely see  
5 any significant physiologic changes, changes in his  
6 blood pressure, changes in his heart rate, breathing  
7 rate. That's already probably been -- occurred. The  
8 baton strikes are, in all probability, un --  
9 non-contributory to changes.  
10 Q Okay. Now, help me out here. We've got him at  
11 the time he's confronted with Officer Brooks, and we  
12 have no evidence of any increase in his excitation other  
13 than the signs and symptoms. At some point in time he  
14 progressively gets more excited, don't he?  
15 A Which is the natural history of excited  
16 delirium.  
17 Q Okay. And at some point, as I understand your  
18 opinion, he gets maxed out on his excitation?  
19 A At some point, correct.  
20 Q And what does that mean exactly, "maxed out"?  
21 A Maxed out, meaning that he has been -- his  
22 heart rate is going fast, he has been exercising or  
23 running or getting physiologically -- I use the term  
24 "revved up" from the underlying drugs, and he is at a  
25 heart rate that's at some level that we don't know

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1 We talked about the excited delirium, the changes that  
2 we're seeing there, that if I gave him epinephrine in  
3 the IV, which would normally increase one's heart rate,  
4 it may not have any physiologic impact.  
5 Q Is there any literature that supports that,  
6 Doctor?  
7 A You asked me that question already, and again,  
8 you can't take somebody on drugs and start studying  
9 their heart rates before and after giving them a baton  
10 strike because it's ethically un -- unable to be done.  
11 And obviously in the field scenario, you can't go and  
12 check somebody's pulse and go and beat them and check  
13 their pulse again.  
14 Q And my opinion would be based on your medical  
15 training and experience. Obviously there's something in  
16 your medical training and experience, outside of a  
17 person being on drugs, that would lead you to believe  
18 that such a thing as being maxed out.  
19 A So if you're asking about my medical  
20 experience, not literature, that's a different scenario.  
21 Q Okay.  
22 A We see people on drugs all the time in the  
23 emergency department. You put a Foley catheter into  
24 their penis, you don't see all of a sudden the heart  
25 rate goes shooting up, even though it's considered a

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1 painful stimuli for you and me off drugs. Putting in  
2 IVs or central lines or doing procedures that are  
3 painful to, again, you or I off drugs, that would in  
4 many people increase their heart rate. We don't see  
5 those physiologic changes on people who are already on  
6 drugs or already revved up on their drugs.  
7 Q Okay. Is there anything about the drug LSD  
8 that would cause this physiological response to be any  
9 different with repeated baton strikes or OC spray or  
10 exercise or anything else that would cause it to be  
11 maxed out or revved up any different? I mean, that's a  
12 terrible question. I'll start all over.

13 Is there anything about the LSD that would  
14 cause you to have a different opinion about a person  
15 being maxed out than one that was not on LSD, under the  
16 same and similar circumstances?

17 A Make sure I understand your question. So you  
18 have somebody who is on LSD and maxed out, comparing to  
19 somebody who is not on any drugs sitting here like you  
20 and I.

21 Q Yes. Well, that's bad. Let's do this: You  
22 know the fact pattern of what happened in this case.

23 A Yes.

24 Q If Mr. Lee had not been on LSD and then had  
25 these baton strikes and OC sprays, running around, would

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1 confrontation continued, and you had the Taser strikes,  
2 more running, where the person in your opinion would be  
3 maxed out if he was not on drugs?

4 A It's -- that's a very difficult hypothetical,  
5 because the average person who has some cognitive  
6 abilities won't keep fighting through multiple Taser  
7 strikes. They'll have given up well before that. So as  
8 a hypothetical, it's very difficult to give you an  
9 opinion because you're now trying to create the scenario  
10 in which somebody's feedback is not working, which is  
11 basically what we'd see with the drugs. That's what the  
12 drugs are doing.

13 Q Okay. Getting back to Mr. Lee specifically, in  
14 your opinion. From the time Officer Brooks arrives, do  
15 you have an opinion as when -- as to when he became  
16 maxed out?

17 A Not a specific time. I think nobody can give  
18 you a specific time. But somewhere prior to his cardiac  
19 arrest he had -- he was maxed out for a period, you  
20 know, minutes, five minutes, 10 minutes, probably -- but  
21 again, it's a hypothetical again, based on case reports  
22 and observations, not necessarily pure science.

23 Q Okay. Of course I'm interested in your  
24 opinions based on a reasonable degree of medical  
25 certainty, and you know we use that in terms of more

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1 he also have maxed out at some point?

2 A Assuming he was on no drugs --

3 Q Yes.

4 A -- your hypothetical is obviously -- fairly  
5 hypothetical, the police would likely not have been  
6 called. But had police come and decided they wanted to  
7 pepper spray somebody who is not on drugs, who is not  
8 acting bizarre, because the bizarreness is -- or the  
9 changes were likely due to his LSD, you would expect to  
10 see somebody who is standing there get pepper sprayed to  
11 have some physiologic changes. They probably would not  
12 be maxed out from just purely pepper spray. So if you  
13 add a baton strike to that, you may see some additional  
14 physiologic changes. You may not, depending on  
15 somebody's heart rate response.

16 People are physiologically different. Not all  
17 respond with purely heart rate and blood pressure  
18 changes, but you certainly could or could not. They  
19 certainly would not be -- I would -- would not be maxed  
20 out in their heart rates, in their blood pressures, and  
21 everything sort of the flight or fight just purely a  
22 typical OC spray without any underlying delusions or  
23 paranoia or any other signs or symptoms they would get  
24 with a drug.

25 Q But would there become a point, if this

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1 probable than not. And I guess my question would be, in  
2 terms of more probable than not, what is your opinion as  
3 to when he became maxed out?

4 A Probably somewhere -- probably somewhere  
5 mid-interaction of that time. He was on his way up when  
6 the police came, he continued to escalate up and then  
7 continued to fight and not comply and then had his  
8 cardiac arrest. So again, I think it inappropriate to  
9 try to say, oh, clearly at 14 minutes post-arrival of  
10 police is clearly when he was maxed out, because there's  
11 no physiologic monitoring going on. But somewhere in  
12 that range of, you know, after police arrived, he  
13 continued his upward trajectory, maxed out, and then  
14 that's when the cardiac arrest followed.

15 Q And in terms of that mid-point, wherever that  
16 was, would that have been somewhere during those 19  
17 applications of the Taser?

18 MS. OLIVER: Object to the form.

19 THE WITNESS: It's probably in that range  
20 there. Could have -- you know, probably started  
21 plus-minus that area, even before, but --

22 BY MR. BEDNARZ, SR.:

23 Q Now, when you say "maxed out," you're talking  
24 about the heart rate of approximately what for Mr. Lee?

25 A Again, people don't typically measure heart

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1 rates in people who are wild, crazy and being stimulated  
2 with whether it be some sort of noxious stimuli. We've  
3 done it in people who don't have it. So it's very  
4 difficult to guesstimate specifically how he -- how high  
5 his was. I mean, I think it's -- it's probably  
6 inappropriate to try to actually put a number on it --  
7 Q Okay.  
8 A -- because my maximum heart rate compared to  
9 anybody in this room here, they're all going to be  
10 different, no matter how hard we stimulate. Add drugs  
11 onto it and it's going to be different. And so I think  
12 it's truly -- and I've seen people on drugs come in with  
13 220, I've seen people on drugs, you know, at 150, and  
14 that may be their maximum rate of doing it. So I think  
15 to try to guess what Mr. Lee was would be truly a guess.  
16 Q And was it detrimental to Mr. Lee to be at a  
17 maxed-out point? In other words, did his risk factors,  
18 arrhythmia or for cardiac arrest, did they increase as  
19 time went on from this max point?  
20 A Did his risk factors?  
21 Q Of having his cardiac arrest. In other words,  
22 at the point he maxes out, he has a certain risk factor.  
23 I assume he's at increased risk of sudden death?  
24 A By virtue of being in excited delirium, his --  
25 it's again back to yes or no. You're in it or you're

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1 Q It makes sense to me from a lay viewpoint that  
2 the longer he was maxed out, would be like a motor being  
3 revved up to the maximum, to use an analogy, that the  
4 longer than you kept him there, the more he'd be at  
5 increased risk of a cardiac arrest. Is that right?  
6 Fair or not fair?  
7 A That is what most would surmise. There is no  
8 data to support that. You will see people who are in  
9 excited delirium and have 60-minute altercations running  
10 around trying to get caught and things like that, and  
11 they survive versus somebody who will come in, have a  
12 very quick one -- one-minute pile-on, get him restrained  
13 quickly and then have a sudden death. So there's no  
14 real timeline as far as that goes, but it's a reasonable  
15 assumption that the sooner we get somebody sedated, the  
16 better their chances will be.  
17 Q And so I understand your opinion, what is your  
18 opinion to a reasonable degree of medical certainty as  
19 to whether or not the continued time increases his risk  
20 of cardiac arrest?  
21 A That's -- that's a very good question. My  
22 opinion would be the longer it takes to get somebody  
23 sedated, the -- in all likelihood, the increased risk,  
24 whatever percentage or number that would be.  
25 Q Early on when I was asking you some questions

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1 not in it. So he's already predestined or his destiny  
2 is going to go there.  
3 Q Okay. Well, he's at a certain risk of dying at  
4 that point?  
5 A Correct.  
6 Q Two minutes later, if his heart rate is still  
7 that high and he's still maxed out and everything, has  
8 his -- does his risk factor continue to go up as more  
9 time elapses at that maxed-out rate?  
10 A There is -- again, it's more of a -- it's more  
11 opinion than data driven, but the longer you keep  
12 somebody revved up, the -- one would assume -- again,  
13 there's no data to support this -- that the risk of  
14 cardiac arrest goes on. The sooner you can start  
15 controlling somebody and sedating them, the better off  
16 they -- that we feel that they are from the medical  
17 community standpoint. But there's not hard data to say  
18 at two minutes, four minutes, six minutes you've doubled  
19 or increased by 2 percent or anything like that. There  
20 is no hard data that way. But from a, yes, physician  
21 and you take somebody who is excited delirium or truly  
22 just completely high on cocaine, the less time you take  
23 to get them calmed down, sedated, restrained, whatever  
24 it is, one would assume the risk for sudden death would  
25 go down.

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1 about whether or not spray, additional spray would be --  
2 would increase the level of his excitation and then the  
3 baton strikes, you mentioned that -- I think you used  
4 the word either "maxed out" or "revved up," and I  
5 believe you mentioned a study that proves that.  
6 A Which part, the OC --  
7 Q OC spray or the baton strike. In other words,  
8 regardless of what the mechanisms are of the excitation,  
9 I understand your opinion to say he's maxed out. I  
10 think you mentioned there were studies out there that  
11 supported that. Maybe not.  
12 A I'm not --  
13 MS. OLIVER: If you'll be a little more  
14 specific. I know you're trying, but --  
15 MR. BROWN: He said you couldn't do studies on  
16 baton strikes.  
17 MR. BEDNARZ, SR.: Yeah, I remember that.  
18 MS. OLIVER: You mean his published study after  
19 he got sprayed with OC, is that the --  
20 MR. BEDNARZ, JR.: He said there's studies out  
21 there to show that once you get maxed out, you don't add  
22 to it.  
23 BY MR. BEDNARZ, SR.:  
24 Q I think you said something to the effect that  
25 there are studies out there that once you get maxed out,

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1 you don't add to the acidosis. I think maybe that  
2 was -- we were talking about acidosis.  
3 A I said that there were studies out there?  
4 Q Okay. I'm not trying to put words in your  
5 mouth. Let me ask you this: During all of this  
6 struggle and the pepper spray and the baton strikes and  
7 the Taser applications, do you have an opinion as to  
8 whether or not his acidosis was increasing?  
9 A His acidosis was probably increasing during  
10 the -- during the time period.  
11 Q Okay. And how long would it have continued to  
12 increase, given the facts, based on your review of the  
13 depositions and statements?  
14 A How long would it have continued to increase?  
15 Q Yes.  
16 A Probably increase to the point of his cardiac  
17 arrest.  
18 Q So he would not have maxed out, in your  
19 opinion, as to the acidosis prior to his cardiac arrest?  
20 A It's hard to surmise, but typically, as far as  
21 the lactic acidosis, the struggle, the fighting, the  
22 drugs on board, you'll -- it will be a progressive.  
23 You're not going to go up and then get better. You may  
24 plateau at some point, and that's, again, more of an  
25 assumption than clinically driven because, again, you

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1 A Does not affect the pH. Certainly no clinical  
2 significant change in levels of pH.  
3 Q Okay. And what do you base that on, Doctor?  
4 Your studies?  
5 A My study, yes.  
6 Q And do you consider your studies to be  
7 authoritative in that regard?  
8 A They're -- they're scientific studies.  
9 Q Okay. Is this a peer-reviewed study?  
10 A It has been peer reviewed, yes.  
11 Q Is the name of that study "Cardiovascular and  
12 Metabolic Effects of the Taser on Human Subjects"?  
13 A If you're holding one of my posters there, it  
14 was the name of a poster that was presented, yeah.  
15 Q Doctor, let me hand you that, let you see the  
16 poster there. Is there a change in the pH?  
17 A There is a -- there is a change from 7.45 to  
18 7.42.  
19 Q Okay. And you have determined that to be not  
20 clinically significant?  
21 A Correct.  
22 Q Okay. What would be clinically significant?  
23 A A change greater than -- well, anything that's  
24 going to cause a change in the pH more than a hundredth  
25 of a place. So 7.4 is considered pH balanced. I'm sure

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1 don't have studies looking at people's pH in the middle  
2 of a struggle on drugs with police. But at some point  
3 you max out or keep crescendoing up until you have the  
4 cardiac arrest.  
5 Q Well, you have read Dr. Ho's studies, and of  
6 course you've performed your own studies --  
7 A Yes.  
8 Q -- in regard to acidosis. In terms of a  
9 five-second application of the Taser, how long does it  
10 take to reach the maximum level of the increase in  
11 acidosis?  
12 A From a Taser activation?  
13 Q Yeah.  
14 A We didn't see any changes in pH based on Taser  
15 activation.  
16 Q Now, is this in your study?  
17 A Our five-second study?  
18 Q Yes.  
19 A That we saw basically -- it was a wash as far  
20 as with pre and post, the pH.  
21 Q What is your opinion, Doctor, as to whether or  
22 not Taser applications affect the pH?  
23 A The effect at the time of the Taser  
24 application?  
25 Q Yes.

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1 that's what you and I should be right now. And it went  
2 from 7.4 to 7.4 to 7.4 to 7.4. Taking it out to the  
3 hundredth place is clinically not significant. So 7.3  
4 would be significant, 7.2 would be significant, 7.1  
5 would be significant, but 7.4 to 7.4 to the hundredths  
6 place with lab values is considered clinically  
7 unchanged. It's potentially even, you know, the error  
8 ratio of the device measuring it.  
9 Q Doctor, what is your opinion as to whether or  
10 not multiple five-second applications -- what is your  
11 opinion as to what effect multiple applications -- let  
12 me, for the purposes of this question, just say four  
13 applications in a one-minute period, what would that --  
14 what effect in your opinion would that have on pH?  
15 A As far as that goes, it certainly wouldn't  
16 create a clinically significant change. I can't give  
17 you -- four-application data is not out there, so I  
18 can't say what that would be specifically. But if  
19 you're talking about pH changes, we tend to see more  
20 changes with regards to exercise than we do to Taser  
21 activations.  
22 Q And what is the basis for that opinion, Doctor?  
23 A Which one? Which opinion?  
24 Q That four applications would not significantly  
25 affect pH.



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1 A I'm saying that I project it would not  
2 clinically change that, since there's some data that  
3 shows that when you have a 15-second application,  
4 subjects actually hyperventilate a little bit, they  
5 breathe a little bit faster, which would have the effect  
6 of blowing off carbon dioxide and actually not lower the  
7 pH but actually increase the pH.  
8 So the question is, do I think four  
9 applications, you know, 20 seconds of applications would  
10 lower the pH, my answer would be I don't believe so.  
11 I'm projecting, but --  
12 Q You're referring to Dr. Ho's study?  
13 A Yes.  
14 Q Do you rely on that study in forming your  
15 opinion or giving your opinion that multiple  
16 applications of the Taser would have no significant  
17 effect on lowering pH?  
18 A I use that data as part of the knowledge base  
19 that I have to form that opinion.  
20 Q So we have -- we have this study that you have,  
21 we have Dr. Ho's 15-second study. What other studies do  
22 you know that are out there that would support your  
23 opinion?  
24 A All the human data studies. And the work has  
25 really been done by my group and Dr. Ho and Dr. Dawes'

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1 produced, he acknowledges your participation or help in  
2 this case.  
3 A I presented at a conference of the NIJ. And so  
4 he was there as part of the panel and I was just a  
5 presenter.  
6 Q I take it you have read this special NIJ  
7 report?  
8 A I read it a while back, yeah.  
9 Q Okay. Let me hand that to you and ask you if  
10 you'd read that title just so we know what you're  
11 reading from.  
12 A Sure. It's the National Institute of Justice,  
13 "Study of Deaths Following Electro Muscular Disruption:  
14 Interim Report."  
15 Q As you read that report, Doctor, is this, in  
16 your opinion, a reliable study?  
17 A It's a report on pulling together different  
18 studies and data from that.  
19 MS. OLIVER: Just to clarify, it's the interim  
20 report. There's a final report --  
21 MR. BEDNARZ, SR.: Oh, there is?  
22 MS. OLIVER: -- that's a different document, I  
23 believe. But anyway, just whether there is or is not,  
24 let's just identify that as the interim NIJ report.  
25 (Mr. Brown left the deposition.)

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1 groups. That's really the only human studies out there  
2 at this time.  
3 Q And, Doctor, in your opinion, are these studies  
4 reliable enough where you can give an opinion to a  
5 reasonable degree of medical certainty that multiple  
6 applications of the Taser would not adversely affect pH?  
7 A That is part of my opinion. The other part of  
8 the opinion is that I know that exercise physiology  
9 studies that tend to create more shifts in pH than the  
10 data from the Taser application. So it's not  
11 specifically only these studies I'm using to form my  
12 opinion, but my knowledge base of human -- of human  
13 exercise physiology as well. But these are part of my  
14 opinion.  
15 Q You know Dr. Bozeman?  
16 A I do.  
17 Q Do you know him personally?  
18 A I do.  
19 Q Have you had discussions with Dr. Bozeman about  
20 any of your testing or about anything concerning Taser?  
21 A He comes to my poster presentations, usually at  
22 the conferences and says "Hi" and "Nice work" and maybe  
23 a little bit of a brief overview, but nothing beyond  
24 that.  
25 Q I notice that he, in this last study he

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1 BY MR. BEDNARZ, SR.:  
2 Q Did you consider this interim report and the  
3 findings to be reliable information?  
4 A I think we'd have to go over specific findings.  
5 I don't tend to blanket any articles without having  
6 certain areas of questions specifically. Meaning that  
7 some people will put things that I don't agree with in  
8 writings -- for example, this textbook -- but if you  
9 want to pull out a specific passage, I'd be happy to see  
10 if I agree with it.  
11 Q Sure.  
12 Do you have another copy of one of these?  
13 Although there may be a final report, I'm going  
14 to ask you some of the specifics.  
15 Is that the same thing?  
16 MR. BEDNARZ, JR.: Yeah.  
17 MR. BEDNARZ, SR.: If I can hand it so he can  
18 read it.  
19 Q And if you'll turn to page 4. Actually, it's  
20 under Findings; it ought to be further than page 4.  
21 "In many cases of excited delirium, high body  
22 temperature is the primary mechanism of death." Do you  
23 agree or disagree with that finding?  
24 A I would disagree as a mechanism of death. I  
25 think the language is not what I would choose if I was

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1 running this.  
2 Q Okay. What would you choose?  
3 A That high body temperature may be a finding in  
4 these deaths.  
5 Q Now, in this case we have no evidence of high  
6 body temperature, correct?  
7 A Correct.  
8 Q Then it goes on to say, "There is no medical  
9 evidence that exposure to CED has an effect on body  
10 temperature." Do you agree with that?  
11 A I agree with that.  
12 Q The next paragraph, "The purported safety  
13 margins of CED deployment on normal healthy adults may  
14 not be applicable in small children, those with diseased  
15 hearts, the elderly, those who are pregnant and other  
16 at-risk individuals." Do you agree or disagree with  
17 that, Doctor?  
18 A Very generic statement, so yes, it's  
19 reasonable.  
20 Q "The effects of CED exposure in these  
21 populations are not clearly understood and more data are  
22 needed." Agree?  
23 A Again, I would have to agree with that.  
24 Q "The use of CED against these populations, when  
25 recognized, should be avoided but may be necessary if

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1 by a gunshot, and then multiple exposures. So there's  
2 all kinds of stuff, but that's a line that is true.  
3 Q Okay. "The repeated or continuous exposure of  
4 CED to an actively resisting individual may not achieve  
5 compliance, especially when the individual may be under  
6 drug intoxication or in a state of excited delirium."  
7 Do you agree?  
8 A And referring to compliance meaning they listen  
9 to you, correct.  
10 Q Okay. "The medical risks of repeated or  
11 continuous CED exposures are unknown." Do you agree  
12 with that?  
13 A And again, repeated being defined as obviously  
14 a number we know, we have some data on three exposures.  
15 We don't have some data on beyond that, in general.  
16 Q "And the role of CEDs in causing death is  
17 unclear in these cases." I broke the sentence down in  
18 two things. So maybe you want to read the whole thing.  
19 "The medical risk of repeated or continuous CED  
20 exposures are unknown, and the role of CEDs in causing  
21 death is unclear in these cases."  
22 A Well, again, I think it's a generic statement  
23 in the sense that there is not human research in certain  
24 areas, and so you can't rule anything out.  
25 Q Okay. Well, and I'm trying to understand your

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1 the situation excludes other reasonable options." Do  
2 you agree?  
3 A Again, that seems like a very generic  
4 reasonable line there.  
5 Q Well, I guess my question is, would you agree  
6 that the state of research on Tasers is not sufficient  
7 to be able to exclude use of the Taser on these people  
8 unless it was absolutely necessary?  
9 A I think the intent of these lines are to say  
10 that if you have to choose between a gun and a Taser for  
11 a child with a knife coming at you, although not  
12 purported -- not tested, it would be a reasonable  
13 choice.  
14 Q "Studies examining the effects of extended  
15 exposure in humans to CED are very limited." Do you  
16 agree with that?  
17 A I agree with that.  
18 Q "Preliminary review of deaths following CED  
19 exposure indicates that many are associated with  
20 continuous or repeated discharge of the CED."  
21 Do you have any information concerning that,  
22 Doctor? Would you have any reason to disagree with  
23 that?  
24 A Well, there's certainly cases in which people  
25 died after a single exposure, single exposure followed

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1 opinion, because you're going to be telling the jury  
2 that these multiple applications of the Taser had no  
3 significant effect on Mr. Lee's death, correct?  
4 A Correct.  
5 Q Okay. And that opinion is at odds with the  
6 findings of Wake Forest, isn't it?  
7 MS. OLIVER: Object to the form.  
8 THE WITNESS: The findings. These are -- these  
9 are comments. These aren't -- it says findings, but  
10 these are just basically comments. There's no data  
11 behind these comments other than what was reported to  
12 them and they make their interpretations of that data.  
13 BY MR. BEDNARZ, SR.:  
14 Q Okay. Well, the opinion you're expressing in  
15 this case -- well, let me ask you this: Can you state  
16 to a reasonable degree of medical certainty that these  
17 19 applications of the Taser had no effect on Mr. Lee?  
18 MS. OLIVER: Object to the form.  
19 THE WITNESS: And I think we've discussed  
20 earlier, 19 applications -- the Taser was fired 19  
21 times. We don't know specifically how many were  
22 effective, and we also know the other statement. So  
23 from a medical -- degree of medical certainty, I  
24 don't -- I feel comfortable saying that the Taser did  
25 not play a role in his death.

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1 BY MR. BEDNARZ, SR.:  
2 Q And my question to you, Doctor, is, if  
3 Dr. Bozeman is correct here that "The medical risks of  
4 repeated or continuous CED exposure are unknown and that  
5 the role of CEDs in causing death is unclear in these  
6 cases" -- assume that that's a true statement or his  
7 opinion -- isn't your opinion at odds with that?  
8 A Well, we don't know which cases he's referring  
9 to. So if he's referring to a 90-pound female with bad  
10 heart disease who got Tasered 19 times and had some sort  
11 of event that sounded like an electrical event at that  
12 time, that may be unclear. So I don't know what cases  
13 you're referring to here, so -- I'm not necessarily  
14 saying I disagree with him, but in the cases that  
15 applies to the case we're discussing, I don't think that  
16 applies to it.  
17 Q Be sure that I understand your opinion. Have  
18 you given me your reasons or the basis for your opinions  
19 already? Now, what I mean by that, you've already said  
20 that you're relying on the human studies conducted by  
21 you, Dr. Ho, and who else?  
22 A Well, with regards to specifically Taser  
23 applications --  
24 Q Yes.  
25 A -- but also causes of death from excited

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1 THE VIDEOGRAPHER: This marks the end of tape  
2 No. 1 in the deposition of Dr. Gary Vilke. Going off  
3 the record, the time is 11:30 a.m.  
4 (Recess.)  
5 THE VIDEOGRAPHER: We're back on the record.  
6 Here marks the beginning of tape No. 2 in the deposition  
7 of Dr. Gary Vilke. The time is 11:42 a.m.  
8 BY MR. BEDNARZ, SR.:  
9 Q I'm almost finished going over these -- what  
10 they call findings. I think the last thing you talked  
11 about was the safety profile. What do you mean by  
12 "safety profile"?  
13 A Meaning the relative safety of a device is what  
14 a safety profile is.  
15 Q Okay. You talk about in terms of the continuum  
16 of force, lethal versus non -- no, that's not -- I'm  
17 still confused. What do you mean by "safety profile"?  
18 A I'm trying to think of what I used the words  
19 "safety profile" in before. But typically when I use  
20 the term "safety profile," I'm referring to how safe  
21 something is. I'm not sure what context I used it in.  
22 Q I think we were talking about this sentence  
23 here, "There may be circumstances in which repeated or  
24 continuous exposure is required, but law enforcement  
25 should be aware that the associated risks are unknown."

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1 delirium and from exercise physiology, there's a whole  
2 vast body. But as far as specific Taser information,  
3 it's from those studies specifically.  
4 MS. OLIVER: Dr. Dawes I believe he said as  
5 well.  
6 MR. BEDNARZ, SR.: That's what it was,  
7 Dr. Dawes.  
8 Q And then it goes on to say, "There may be  
9 circumstances in which repeated or continuous exposure  
10 is required, but law enforcement should be aware that  
11 the associated risks are unknown." And I guess my  
12 question to you, Doctor, is, would you agree with  
13 Dr. Bozeman that the associated risks of multiple  
14 applications or repeated or continuous exposure of CEDs  
15 is unknown?  
16 A So the -- let me reread the line there again.  
17 The data from -- from multiple exposures hasn't -- is  
18 not out there. The risks are. There are presentable  
19 risks, but are they completely known? I guess the  
20 answer is, since you haven't Tasered somebody 19 times  
21 or 18 or 15 or whatever the number is, that specifically  
22 is not out there, but there's certainly enough data out  
23 there to point towards a safety profile.  
24 Q I take it --  
25 Let's take a break.

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1 And I believe that's -- and I'm not sure, Doctor, but I  
2 believe that's when you were talking about depends on  
3 the safety profile.  
4 MS. OLIVER: Do we want to just read back the  
5 question and answer?  
6 MR. BEDNARZ, SR.: Yeah, can you do that? We  
7 want to be sure we're accurate.  
8 (Record read as follows:  
9 "Q Let me reread the line there again.  
10 The data from -- from multiple exposures  
11 hasn't -- is not out there. The risks are.  
12 There are presentable risks, but are they  
13 completely -- I guess the answer is, since you  
14 haven't Tasered somebody 19 times or 18 or 15  
15 or whatever the number is, that specifically is  
16 not out there, but there's certainly enough  
17 data out there to point towards a safety  
18 profile.")  
19 BY MR. BEDNARZ, SR.:  
20 Q And the court reporter just read that question  
21 back. What did you mean, there's enough data out there  
22 in order to develop or have a safety profile?  
23 A There's enough data out there to say that we  
24 know that it doesn't show evidence of electrical -- or  
25 electrocution type things that originally people had

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1 been concerned about. We know that people breathe  
2 during the Taser application. There is no ventilatory  
3 effects. We know that -- or no ventilatory effects that  
4 tend to cause hypoventilation. People actually breathe  
5 a little faster during the Taser application. We know  
6 that there is some data out there on pH changes, or lack  
7 of pH changes, in certain numbers of Taser exposures.  
8 We know that there is no evidence of electrical activity  
9 on the heart with regards to the contraction with  
10 ultrasound during evaluation. So there's a decent body  
11 of knowledge out there on human applications of this  
12 device.

13 In addition, there's also a lot of data out  
14 there on physiologic responses to drugs, to underlying  
15 other aspects of the specifics of this case to, again,  
16 put them together. But as far as the profile goes, it  
17 seems there's no data out there that says it is truly  
18 unsafe for humans; multiple applications can be done.

19 This -- the purpose of this paragraph is to say  
20 there is no data that says, you know, five is worse than  
21 10 is worse than 20 applications, but to be cognizant of  
22 the fact that that data is not out there if you're going  
23 to be using it multiple times.

24 Q Okay. That's the way you're reading it,  
25 Doctor. The way I read this in relation to your safety

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1 profile is that we don't have a good safety profile for  
2 repeated or continuous exposures of a CED.

3 MS. OLIVER: Is there a question?

4 BY MR. BEDNARZ, SR.:

5 Q Isn't that what he's saying here, that we don't  
6 have enough information to determine that it's safe to  
7 use the Taser --

8 A Which line are you reading, I'm sorry?

9 Q Well, I'm really referring to that whole  
10 paragraph there.

11 A Because he's referring to preliminary review of  
12 deaths, so he's going case by case. Following CED  
13 exposure indicates that many are associated with  
14 continuous or repeated discharge of CED. Well, that's  
15 true. Many deaths after the Taser applications have had  
16 repeated exposures. It doesn't mean that they actually  
17 caused the death or impacted on the death.

18 So he's just reviewing -- this conference was  
19 basically a review by medical examiners on a lot of the  
20 autopsy data as well as a lot of the medical data that  
21 was currently available at the time.

22 Q Okay. Doctor, do you interact with law  
23 enforcement in regard to the use of Tasers?

24 A I do.

25 Q You do some teaching from a medical viewpoint?

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1 A I do.

2 Q Okay. Do you teach police officers -- first of  
3 all, does San Diego -- what county is this?

4 A San Diego County.

5 Q Okay. Do they use Tasers here in San Diego  
6 County?

7 A They do.

8 Q Are you teaching police officers in San Diego  
9 County that it is -- that continuous or prolonged  
10 applications of the Tasers are safe?

11 A I am teaching them that obviously if it's my  
12 relative, I would prefer them to use a Taser than a gun  
13 to subdue them. I teach them that there is certainly  
14 data out there that shows safety with a Taser and that  
15 they should basically use the least amount of  
16 activations as need be to gain control of the subject  
17 safely. We don't put a specific number. We don't say  
18 that it's unsafe to use it multiple times. We just say,  
19 you know, follow with the appropriate. If somebody is  
20 truly in states of excited delirium, it's a medical  
21 urgency, have EMS roll early. And that's basically what  
22 our teaching is.

23 Q Do you teach them in regard to if they see a  
24 person with excited delirium, as to whether or not they  
25 should even use a Taser on them?

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1 A We certainly discuss excited delirium and use  
2 of Taser with it. And we certainly do not discourage  
3 the use of Taser. And in fact, we have taught them that  
4 with excited delirium, the sooner we can get them in  
5 control and then hopefully get EMS to start treatments,  
6 the better off the subject is. And oftentimes the best  
7 way to gain faster control is a Taser rather than  
8 chasing them around a parking lot and wrestling and  
9 fighting and all the Rodney King type stuff.

10 Q And do you do that based on Taser's  
11 recommendation?

12 A It's based on my own evaluation of the data.

13 Q Have you had to use a Taser in an emergency  
14 room?

15 A In an emergency room we have used a Taser -- I  
16 have not personally pulled the trigger on a Taser. We  
17 have used a Taser in our emergency department.

18 Q Okay. Have you ever used one on any -- in the  
19 emergency room, someone else, on a person with excited  
20 delirium?

21 A We had somebody exhibiting signs of excited  
22 delirium, we did use it, yes.

23 Q Why would you have used a Taser on that  
24 individual instead of some other type of force or  
25 medication?



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1 A The person was running naked in our bathroom,  
2 had already bit through his wrists and blood was  
3 spraying everywhere. So he was a risk for exposure, so  
4 the Taser was the best way to incapacitate him to get  
5 him safely treated.

6 Q The final sentence here is, "Therefore, caution  
7 is urged in using multiple activations of CED as a means  
8 to accomplish subdual." I take it you don't necessarily  
9 agree with that?

10 MS. OLIVER: Object to the form.

11 THE WITNESS: Again, it depends upon how you  
12 define "caution." We don't propose that you use it  
13 haphazardly. If that's what it takes to -- multiple  
14 episodes of use of the CED are needed to safely bring  
15 somebody into restraint or into -- into subdual, we  
16 don't say you can't do it. We don't recommend against.  
17 We just recommend using what they feel to be the least  
18 amount of discharges as needed to do that.

19 BY MR. BEDNARZ, SR.:

20 Q They talk -- he talks about here, and I'm down  
21 at the end of this last paragraph or third paragraph,  
22 and he talks about "Preliminary review of deaths  
23 following CED exposures, that many are associated with  
24 continuous or repeated discharge of the CED." Have you  
25 reviewed that data that he's referring to there?

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1 a -- it's a national group that takes on certain topics,  
2 whether it's use of force, whether it's gang-related  
3 type stuff, they do a lot of basically police activity  
4 type of either research, reviews or coordination.

5 Q Okay. Now, did they ask you to do this?

6 A They were doing the project with one of their  
7 interns. And I was at a conference and asked what their  
8 plans were to do with this data, and they really had no  
9 plans, so I offered my assistance in helping review it  
10 to the point where we could actually publish it.

11 Q Okay. And were you paid to do this?

12 A No, I was not.

13 Q And I take it this was published?

14 A It is accepted for publication but has not yet  
15 been published.

16 Q Okay. And it's been accepted but not  
17 published?

18 A Correct.

19 Q Who has accepted it?

20 A Dr. DiMaio's journal. I think it's the  
21 American Journal of Forensic Sciences, I believe.

22 Q And do you have a copy of this study that you  
23 have submitted?

24 A I have -- I have a copy on file.

25 Q Okay. Do you have any objection to furnishing

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1 A I have reviewed deaths following CED  
2 application, yes.

3 Q I mean, have you gone to any particular study  
4 or database for these cases?

5 A I've done some research in the area. So I have  
6 reviewed autopsy reports, which is basically the type of  
7 work they were referring to here, I believe.

8 Q Tell me what research you have done in this  
9 area.

10 A We have worked with the Police Executive  
11 Research Forum to look at some deaths following Taser  
12 activation in the view of what were the reasons the  
13 person had the Taser activated and whether they were  
14 armed, not armed, and what -- and some generic  
15 biographic data, you know, age, sex, as best we can do  
16 with that.

17 Q Okay. And who asked you to do this?

18 A Nobody asked me to do this. It was my own  
19 research. It was being performed by PERF, and I paired  
20 up with them to help publish their data.

21 Q Okay. And you say PERF. What does that mean?

22 A The Police Executive Research Forum.

23 Q And who are these people?

24 A It's a group in Washington, D.C., and they do  
25 work along the lines with police chiefs. It's sort of

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1 that with us?

2 A No.

3 Q Okay. And tell me essentially what you did,  
4 how many cases you studied and what your findings were.

5 A I knew that was coming. I think there were --  
6 I believe that it was 66 records, and it's -- it's a  
7 retrospective review of records. So it's sort of a --  
8 it's a demographic evaluation. So it's not pure science  
9 in respect to following forward. So -- and it's

10 basically looking at the types of scenarios that led  
11 police to utilizing Tasers, whether Tasers are being  
12 used in certain modes, drive stun versus probe modes.  
13 And it's overview data, but it's not hard science. It's  
14 more of a demographic publication.

15 Q Was there anything in that study of the 66  
16 records that would indicate how many of those people  
17 died of continuous and multiple exposures?

18 A I believe there is some data in there. I don't  
19 recall specifically because I haven't read it in about a  
20 year and a half, because this journal is a little behind  
21 in getting it published.

22 Q And where did you get these records from?

23 A These were obtained by PERF, actually, from the  
24 police departments.

25 Q Okay. Have you ever requested any information

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1 from Taser in regard to their database?  
2 A We've had discussions about potentially  
3 utilizing some of their non-biased aspects of it,  
4 meaning autopsies that are -- that they have acquired,  
5 but I've actually never utilized their database.  
6 Q Okay. Have they offered you the database?  
7 A They have not.  
8 Q Have you requested that they do?  
9 A We've had discussions about potentially doing  
10 that but really have never gone through with it because  
11 they were doing their own research with Dr. Ho.  
12 Q And when were these discussions taking place?  
13 A At one of the conferences. I think it was the  
14 Society For Academic Emergency Medicine. Society For  
15 Academic Emergency Medicine. And they -- they come by  
16 to see the posters that we're presenting on there.  
17 Q Have you ever visited Taser headquarters?  
18 A I have not.  
19 Q Have you met the Smith brothers?  
20 A I have met one of the Smiths. I didn't know  
21 they were brothers.  
22 Q Tom or Patrick?  
23 MS. OLIVER: Rick.  
24 THE WITNESS: Rick, yes. Rick Smith.  
25 //

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1 A There may be one -- trying to remember one  
2 more, of a case in New Mexico in which a Taser was used,  
3 I believe, to try to extract somebody from a cell. And  
4 the -- as well as pepper spray and other things. But I  
5 have not been deposed in that.  
6 Q And you're testifying for the municipality in  
7 that case?  
8 A Correct.  
9 Q While we're on that subject, Doctor, have you  
10 been deposed or given any trial testimony since  
11 April 28th, 2008?  
12 A No trial testimony, no.  
13 Q Any deposition testimony?  
14 A I had a deposition last week up in L.A.  
15 Q And what was that case?  
16 A It's a restraint case. There's no Taser  
17 involved. Once I go through it, I erase everything from  
18 my mind. I believe it's Lewis versus Riverside.  
19 Q Lewis versus Riverside?  
20 A Uh-huh.  
21 Q And what were the allegations of negligence in  
22 that case?  
23 A Positional asphyxia.  
24 Q Doctor, we were talking about these  
25 recommendations by Dr. Bozeman and the Wake Forest

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1 BY MR. BEDNARZ, SR.:  
2 Q And when did you meet him?  
3 A I met him -- it may have been a conference in  
4 Vegas. It was one of the conferences he was at, just  
5 met him, just talking in general. Nothing specific.  
6 Q Have you ever been asked to do any work  
7 specifically for Taser?  
8 A I have not.  
9 Q I've got a list of the cases in which you've  
10 given depositions and testimony. Have you ever been  
11 consulted to work on a Taser case where you did not give  
12 a deposition?  
13 A I have been consulted by a case in Hawaii on a  
14 Taser case that has not gone to deposition.  
15 Q All right. And have you been officially  
16 retained in that case?  
17 A I have been, yes.  
18 Q And was that for the defense?  
19 A It's for the defense.  
20 Q And was that for -- in defense of Taser?  
21 A It was in defense of the municipality that was  
22 being sued.  
23 Q Any other cases involving a Taser where you've  
24 been retained or consulted and have not given a  
25 deposition?

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1 finding, law enforcement. I notice in Chapter 8 of this  
2 book that you've authored, at the very bottom of it  
3 you'll see where I've highlighted. "Although" -- would  
4 you read that line in?  
5 A "Although generally safe, there are precautions  
6 that should be used to maximize safety."  
7 Q Okay. Doctor, as it applies to Tasers, what  
8 would your precautions be in order to maximize safety?  
9 A That's what I described earlier, to use it as  
10 needed for -- or the fewest numbers of activations as  
11 necessary to get somebody into custody or into control.  
12 Q Would you agree that continuous repeated  
13 exposures at some point in time increase the risk of  
14 death to the person that it's being applied to?  
15 A There's no data to support that.  
16 Q Okay. Is there any data to support the fact  
17 that it does not increase the risk of death?  
18 A There's certainly data out there that shows in  
19 prolonged in humans, that they haven't died with  
20 prolonged exposures.  
21 Q And what I'm getting at, just because we don't  
22 have data saying positively that repeated exposures  
23 increase the risk of death, that doesn't mean that it  
24 does not increase the risk of death, correct?  
25 A There are certainly data out there on humans or

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1 data that have been evaluated on humans that were not  
2 under the influence of drugs for prolonged exposures,  
3 30 seconds, 45 seconds continuous, who survived very  
4 well without dying. So there is some data out there to  
5 show that there is a safety profile. There's also  
6 plenty of data to show that people who are intoxicated  
7 on drugs and exhibiting signs and symptoms of excited  
8 delirium will die without a Taser activation. So I  
9 think you have to pull the whole scenario in there  
10 rather than just pieces of it.  
11 Q "Research on the" -- I'm reading out of your  
12 chapters. "Research on the effects and safety of Taser  
13 is limited." Would you still agree with that?  
14 A At the time this chapter was written, it was  
15 limited. It's still -- there's more out there, but it's  
16 certainly not a complete dataset.  
17 Q Okay. Well, certainly Dr. Bozeman believes  
18 that it's still limited, especially as to continuous and  
19 prolonged exposures?  
20 A That there is no data on -- published on long  
21 exposures, correct.  
22 Q Then you go on to talk about "The theoretical  
23 calculations of the physical effects of damped  
24 sinusoidal pulses" -- how do you pronounce that?  
25 A Sinusoidal.

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1 not Patrick Lee was suffering from these muscular  
2 effects that you describe in this chapter?  
3 A There was some testimony that -- to the effect  
4 that he was receiving activations that were clinically  
5 consistent with the neuromuscular dissociation, so they  
6 were effective activations, but not all of them.  
7 Q What respiratory -- the next area that you  
8 mention in the book, respiratory effects, what  
9 respiratory effects would you expect to have from  
10 repeated and continuous applications of the Taser?  
11 A From what my chapter is, and there may be more  
12 data out since that chapter was written, the respiratory  
13 effects really have been nothing more than some  
14 increased hyperventilation in normal subjects. In  
15 somebody who is already sort of, again, revved up a  
16 little bit, they may be hyperventilating already from  
17 the activity. So you wouldn't expect to see much more  
18 than that. It certainly does not impede one's ability  
19 to breathe or ventilate.  
20 Q You go on to say here that "One could develop a  
21 respiratory acidosis as a result of hypoventilation."  
22 A I'd like to read that phrase there, just make  
23 sure.  
24 Q It's at the top.  
25 MR. HARRIS: This is Tyree Harris in Nashville.

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1 Q Okay. -- "for which the Consumer Products  
2 Safety Commission concluded that the Taser should not be  
3 lethal to a normal healthy person." And then the last  
4 sentence, "Understanding the effects of the Taser under  
5 various organ systems and physiology is critical to  
6 understanding the safety of these devices." Correct?  
7 A That's what it says.  
8 Q Okay. So tell me what the effects of the Taser  
9 in your opinion are on the organ systems.  
10 A Well, that's what the chapter is about. So the  
11 critical aspect is just to give people the line-up of  
12 how our chapter will go. So organ systems,  
13 musculoskeletal. The effects of the Taser really are to  
14 contract the muscles in such a rapid rate that it  
15 creates a neuromuscular dissociation, meaning your brain  
16 may say move your arm, but your muscles are contracting  
17 so fast that you cannot control it. Certainly it can  
18 cause -- it causes a form of muscle tightening in that  
19 case.  
20 As far as skeletal effects, it doesn't have any  
21 direct impact on the skeletal system. There's certainly  
22 case reports of injuries associated with it, with falls  
23 associated with the use of Taser, but nothing specific.  
24 Q And before we move on to that -- I don't want  
25 to cut off -- do you have an opinion as to whether or

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1 The telephone seems to have been moved away from the  
2 questioner. We can hear the answers fine, but we have  
3 great difficulty hearing --  
4 MR. BEDNARZ, SR.: I think we're okay now. I  
5 had the microphone covered up, Tyree. I was trying to  
6 cut you out.  
7 MR. HARRIS: And you did an excellent job.  
8 THE WITNESS: That sentence is part of a  
9 phrase, if you mind me reading it. It says, "There are  
10 some theoretical concerns that should respiratory  
11 function be inhibited, one could develop respiratory  
12 acidosis as a result of hypotension." And we go on to  
13 say, "This is purely hypothetical, however." And it  
14 is -- you know, "It's suggested in part by a CBS news  
15 report of an Air Force Study not yet available to the  
16 general public in which pigs were repeatedly subjected  
17 to multiple Taser discharges. This is an area which  
18 further research is needed." I sort of jumped to the  
19 very end. And subsequently there is -- there is some  
20 more data out there that shows that there is not a  
21 hypoventilation, but actually a hyperventilation.  
22 BY MR. BEDNARZ, SR.:  
23 Q And would you identify that study of that data?  
24 A Both the Ho study, or Dawes -- I believe it's  
25 Ho's. They work together on a lot of their work. And

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1 our work as well showed that people do breathe and do  
2 not hypoventilate.  
3 Q Your work as well?  
4 A Correct.  
5 Q And what work are you talking about?  
6 A The data that was published in the Annals of  
7 Emergency Medicine looks at that, we have entitled CO2  
8 evaluations, which show there is no retention of carbon  
9 dioxide during a Taser activation or subsequent or after  
10 a Taser activation.  
11 Q And what was the name of that study?  
12 A "Physiologic Effects of a Conductive Electrical  
13 Device in Humans." I'd have to pull it specifically  
14 because --  
15 Q Okay. Was that the one that was done in 1999?  
16 A '99 --  
17 Q For litigation purposes?  
18 A No. This was not done for litigation purposes.  
19 Q Okay. When was this study done you're talking  
20 about? And you can refer to the --  
21 A And I've done no Taser work for litigation  
22 purposes. Just to be -- for the record, I've done no  
23 Taser work for litigation purposes.  
24 Q Okay. I have that confused with something else  
25 that you did early on.

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1 activation, either a single activation, or three  
2 five-second activations, again, don't show any  
3 hypoventilatory effects. They actually show the people  
4 breathe a little bit faster.  
5 So in the chapter we talk about the theoretic  
6 concern of people not breathing to increase the  
7 acidosis. It actually seems to be the opposite. They  
8 breathe a little bit faster, blow off their carbon  
9 dioxide and actually can create an air of metabolic  
10 alkalosis.  
11 BY MR. BEDNARZ, SR.:  
12 Q Help me out with this.  
13 A I'm sorry, respiratory alkalosis. My  
14 apologies.  
15 Q Help me out with this. First of all, are you  
16 an expert in how a Taser -- are you an expert in Tasers,  
17 the mechanical aspects of Tasers?  
18 A I know of that. I would not purport myself to  
19 be an expert on the actual mechanisms of firing of a  
20 Taser.  
21 Q Okay. Do you know the difference in terms  
22 of -- the difference between an M26 and an X26?  
23 A There's some subtle differences with regards to  
24 wave forms, but I'm not going to quote myself to be an  
25 expert on that part of it.

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1 I've got something. Is this the study you're  
2 talking about?  
3 A That is part of the data for the study. That  
4 is not -- that's not the complete data. The study was  
5 actually published in its complete form, and that was  
6 the -- on my C.V. it's No. 118, "Physiologic Effects of  
7 Conductive Electrical Weapon on Human Subjects" in the  
8 Annals of Emergency Medicine 2007.  
9 Q Okay. And this was for a -- one five-second  
10 exposure?  
11 A Correct.  
12 Q And you can refer to it, Doctor, but what is  
13 the significance of that study in regard to how multiple  
14 Taser devices would affect breathing?  
15 MS. OLIVER: Object to the form.  
16 THE WITNESS: Again, this study is one piece of  
17 the puzzle. It doesn't show -- it showed that, one,  
18 people do breathe during Taser activations. We were  
19 able to measure breath-by-breath ventilations. And so  
20 we know that people actually breathe during it, which  
21 was one of the theoretic concerns that humans would not  
22 be able to breathe because the diaphragm would be  
23 paralyzed. That's not the case. This data is single  
24 activation, as you noted. It is a piece of the puzzle  
25 as well as the work by Ho which showed a 15-second

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1 Q Are you an expert on how these small batteries  
2 can have such a devastating effect on the body?  
3 MS. OLIVER: Object to the form.  
4 MS. ANDERSON: Object to the form of the  
5 question. We've had that question in other depositions.  
6 MR. BEDNARZ, SR.: Does that mean I can't ask  
7 it or just --  
8 MS. ANDERSON: I'll just keep objecting to it.  
9 MR. BEDNARZ, SR.: Okay.  
10 THE WITNESS: As far as how it works, I  
11 certainly have some background into the rapid cycling of  
12 the pulses and how it keeps a muscle tightening and the  
13 voltage and amperage aspects of it. But I won't say  
14 that I'm an electrical engineer nor a -- from that  
15 perspective, I don't give it.  
16 BY MR. BEDNARZ, SR.:  
17 Q From a medical viewpoint, what is it about the  
18 activation of the Taser, how does that affect the brain  
19 and the brain's function?  
20 A Well, when a Taser is activated in somebody, as  
21 far as the ability of the brain to think, it does not  
22 have an impact on the brain. So your ability to think,  
23 sense pain, do whatever you want to do is there, but if  
24 it's activated the way it's supposed to work, it will --  
25 it will impede your ability of your brain to get those



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1 neurotransmissions to control muscles the way you want  
2 them to.  
3 Q So it would impede your voluntary responses  
4 from the brain?  
5 A That's -- that's basically what it does. It's  
6 neuromuscular dissociation.  
7 Q What about the involuntary responses of the  
8 brain; for example, we have self-regulating mechanisms,  
9 I guess, that the brain is regulating. Does it affect  
10 that at all?  
11 A There hasn't really been any data that show it  
12 affects those types of functions; meaning, you know, as  
13 far as breathing. Breathing does not stop, which is  
14 sort of an auto-regulatory. We don't have to think  
15 about that. We haven't seen people losing continence of  
16 their urine or stool during these activations, at least  
17 the several hundreds that I've been involved with. So a  
18 lot of the involuntary types of things that our brain  
19 controls maintains that.  
20 But it appears to be more of a peripheral  
21 impedance, meaning it's not actually the central level  
22 that you're blocking these abilities, it's the nerves  
23 that are in the periphery trying to work those muscles  
24 that are being blocked out because the muscles are  
25 already fully stimulated and the nerves can't make any

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1 their heart rate, you can do that. We've seen it  
2 increase people's heart rate prior to the Taser  
3 activation because they see it, if they're aware it's  
4 going to happen, the flight or fight stimulation comes  
5 up there. So for police officers knowing the Taser's  
6 going to come up and be applied, they will often have  
7 their heart rate increase even before the activation  
8 occurs. But as far as other cardiac effects, those are  
9 the main versions of them.  
10 Q Help me out here, Doctor. As I understand what  
11 you said, in your opinion it increases heart rate,  
12 correct?  
13 A It has been shown in normal human subjects to  
14 increase heart rate.  
15 Q What -- now, you've already mentioned it is  
16 your opinion that it's because of the pain and the  
17 adrenaline flow, I guess, from the fact they're going to  
18 be Tased?  
19 A Correct.  
20 Q How do you know that?  
21 A How do I know that --  
22 Q That that is the cause of the increased heart  
23 rate?  
24 A That's the only intervention occurring in these  
25 people. So if you're not -- it's basically you have

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1 changes with that.  
2 Q Okay. I didn't see specifically in here where  
3 you discuss other physiologic effects of the Taser.  
4 What are the other physiological effects of the Taser?  
5 A I discussed the cardiac effects.  
6 Q Okay. What are the cardiac effects?  
7 A Well, as far as Taser goes, or Taser  
8 specifically, I guess which is where most of the  
9 research has been done, it does not cause an elevation  
10 in troponin levels, which is a cardiac marker, a  
11 biomarker of injury, there's no data to support that  
12 except for one case of one -- part of one study that  
13 Dr. Ho said it was reported, and that was difficult to  
14 interpret because it was probably lab error rather than  
15 a true cardiac effect.  
16 There has been -- as far as the data looking at  
17 electrical activity of the heart, there hasn't been any  
18 data that shows there are changes in electrical  
19 durations or electrical impulses. And echocardiography  
20 studies, there's, again, been no data that shows that  
21 there is pacing or loss of control of the way the heart  
22 works based on the electrical activity of the Taser.  
23 The Taser will cause one's heart rate to increase  
24 because it does have a painful component to it. So if  
25 it's somebody who is -- has the ability to increase

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1 somebody who's got a normal heart rate, and then it's  
2 being monitored and then you tell them they're going to  
3 be Tasered and the heart rate goes up and they get  
4 Tasered and the heart rate stays up and it comes back  
5 down, that's the only experimental change in protocol  
6 that is the likely source of the change.  
7 Q Okay. So it's your opinion that the increased  
8 heart rate -- and you've got a study on this, correct?  
9 A Yes.  
10 Q Is it your opinion that the increased heart  
11 rate is only because of the pain and the subsequent  
12 adrenaline flow?  
13 A I don't believe I said that.  
14 Q Okay. Then help me out. Help me understand.  
15 A Sure. So in a normal host -- the study is not  
16 in people who are already intoxicated on drugs or in  
17 excited delirium -- when you are going to apply Taser  
18 activation to them, there is a certain unknown fear  
19 factor that will obviously potentially increase your  
20 heart rate, and we see that in our police recruits that  
21 are being involved, and then we'll see a subsequent mild  
22 increase of heart rate after the Taser activation that  
23 comes back down.  
24 Q Okay.  
25 A So there's several factors, not just the pain,

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1 but also the anxiety that can come with it.  
2 Q Okay. What about the fact that you're having  
3 muscular effects, isn't that an increase in demand of  
4 oxygen?  
5 A A short duration of activity, similar to a  
6 seizure. You don't see the oxygen demands go so much  
7 that would actually impact heart rate specifically.  
8 Q Okay. Is it your testimony that the muscular  
9 effects that are caused by the Taser would not increase  
10 the heart rate?  
11 A That the muscular effects. Well, the muscles  
12 are what are sensing the pain, so that's the pain  
13 stimulus, so that would actually be part of the process  
14 that would increase the heart rate.  
15 Q And what I'm getting at is if I'm running, I'm  
16 exercising my muscles, correct?  
17 A Correct.  
18 Q And the exercise of those muscles cause an  
19 increase in heart rate?  
20 A Exercise will increase the heart rate, correct.  
21 Q Is the muscle contractions different to the  
22 point that you would not expect an increase in heart  
23 rate because of the Taser?  
24 A So for a five-second duration?  
25 Q Yes.

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1 would require an increase in heart rate beyond what you  
2 would probably get from the painful component of the  
3 muscle contractions themselves.  
4 Q And what about a person who was already  
5 exerted?  
6 A So a person who has already exerted would  
7 likely have a heart rate that's already increased. And  
8 so would you see an increase in the heart rate on top of  
9 that? Again, that -- in our data, I don't believe we  
10 saw an additional increase in heart rate in somebody who  
11 has already been exerted to a fairly high level of  
12 exercise, given a Taser activation on top of that.  
13 Q So what would be your opinion to a reasonable  
14 degree of medical certainty as to whether or not  
15 continuous and repeated exposures would cause an  
16 increase in heart rate, irrespective of the pain  
17 component?  
18 MS. OLIVER: Object to the form.  
19 THE WITNESS: When you're saying "continuous,"  
20 I assume you're referring to five seconds on, five  
21 seconds off versus a 45-second or continuous exposure.  
22 Because you got two parameters there.  
23 BY MR. BEDNARZ, SR.:  
24 Q Okay. Let's do it both ways. Let's just say  
25 15 seconds of separate five-minute -- five-second

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1 A It's -- I think it's very difficult to separate  
2 out the pain component from, you know, the oxygen  
3 demands. Because for a five-second activation or  
4 several activations, we certainly will not see hypoxia,  
5 low oxygen saturations. We won't see changes like that  
6 after seizures. You know, for a 10-minute seizure, we  
7 won't see the lowering of oxygenation. We will see some  
8 increase in heart rate, but not specifically to the  
9 level that we'll see a lot of times with the Taser  
10 activation in our human subjects.  
11 Q I guess what I'm asking you, Doctor, can you  
12 state to a reasonable degree of medical certainty that  
13 the effect of the Taser on the muscles can increase the  
14 heart rate irrespective of the pain component?  
15 A Are you talking about a single activation?  
16 Q Yes.  
17 A Single activation, a five-second activation of  
18 muscle contractions should not have any physiologic  
19 impact on heart rate in and of itself.  
20 Q And let me take that and increase it to four  
21 applications, 20 seconds of exposure, what would be your  
22 opinion in that regard?  
23 A You shouldn't see any changes in and of itself.  
24 A normal volunteer at rest who hasn't been exercising,  
25 you shouldn't see any changes in oxygen demand that

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1 exposures. In your opinion, to a reasonable degree of  
2 medical certainty, would that cause an increase in heart  
3 rate, irrespective of the pain component?  
4 A Well, I think that would be impossible to  
5 separate out unless you had somebody who was completely  
6 anesthetized and -- because that's the only way you're  
7 going to get the pain component removed from it,  
8 correct? So it's a hypothetical that's impossible to  
9 test. But we certainly do know that the pain component  
10 has a significant impact on heart rates at times.  
11 Q Do you have an opinion as to whether or not  
12 Patrick Lee was experiencing pain during the entire time  
13 he was being Tased?  
14 A He may have had some -- some pain associated  
15 with that, or a sensation of pain.  
16 Q Do you have any reason to believe he did not?  
17 A During the activations that actually took  
18 effect --  
19 Q Yes.  
20 A -- there -- the LSD is a hallucinogen. It can  
21 be dissociative to some degree, meaning you can separate  
22 some symptoms. That would be the only reason to assume  
23 that maybe he didn't have a -- have the complete pain  
24 sensation that you or I would have if we were on LSD,  
25 but there's no data to say he didn't have some.

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1 Q In terms of probabilities, would you agree it's  
2 more probable than not that he experienced pain every  
3 time he was activated, effectively?  
4 MS. OLIVER: Object to the form.  
5 THE WITNESS: He probably had painful  
6 experiences.  
7 MR. BEDNARZ, SR.: What time you want to break  
8 for lunch?  
9 MS. OLIVER: It's up to you.  
10 MR. BEDNARZ, SR.: How about you, Doctor,  
11 what's your preference?  
12 THE WITNESS: I've got the whole day off, so  
13 whatever is easier.  
14 MR. BEDNARZ, SR.: We've got to have lunch.  
15 I'd just as soon go ahead and get it done.  
16 It's 2:30 there in Nashville, isn't it?  
17 MR. HARRIS: Yes, sir.  
18 MR. BEDNARZ, SR.: Are you ready to go get a  
19 bite to eat?  
20 MR. HARRIS: All right. I'm probably past it  
21 now.  
22 MS. ANDERSON: It's 3:30 here in Fort Wayne.  
23 We're way past it.  
24 MR. BEDNARZ, SR.: Okay. Well, we're hungry  
25 out here in San Diego.

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1 A Same response. I haven't reviewed their  
2 materials.  
3 Q Would you consider excited delirium to be a  
4 specialty for psychiatrists?  
5 A A specialty. As an area of specialty?  
6 Q Yeah.  
7 A I consider it more of a diagnosis or a -- you  
8 know, a syndrome rather than an area of specialty.  
9 Q And that's a poor question. Is this more of a  
10 psychiatric condition than a medical condition?  
11 A I think of it as more of a medical condition by  
12 tradition, in the sense that, I mean, certainly  
13 psychiatrists should be aware of it, forensic scientists  
14 should be aware of it, emergency physicians should be  
15 aware of it. But I'm not sure anybody --  
16 Feedback. Somebody's speaker phone on?  
17 Anybody --  
18 MS. OLIVER: Is there a speaker phone that's  
19 causing some feedback?  
20 MR. HARRIS: Here in Nashville there's a lot  
21 of -- sometimes there's a lot of popping that we hear.  
22 I don't know the cause of it.  
23 MS. ANDERSON: I just heard it right then.  
24 MR. BEDNARZ, SR.: Yeah, I did that. But we  
25 had some feedback, but that's okay.

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1 MS. ANDERSON: How long are you taking for  
2 lunch? We'll call back into this line.  
3 MR. BEDNARZ, SR.: I need a sandwich. I would  
4 think it would take 45 minutes.  
5 THE VIDEOGRAPHER: Counselor, should we go off  
6 the record?  
7 MR. BEDNARZ, SR.: Yeah, let's go off the  
8 record.  
9 THE VIDEOGRAPHER: Going off the record, the  
10 time is 12:25 p.m.  
11 (Lunch recess taken from 12:25 p.m.  
12 to 1:39 p.m.)  
13 THE VIDEOGRAPHER: We are back on the record.  
14 The time is 1:39 p.m.  
15 BY MR. BEDNARZ, SR.:  
16 Q Dr. Vilke, we were having some small talk while  
17 we were still off the record, and I'm still trying to  
18 understand excited delirium. I think I mentioned that  
19 to you. Excited delirium is not recognized by the  
20 American Medical Association, is it?  
21 A Actually, I'm really looking to the AMA's  
22 recognition of disorder, so I really couldn't answer  
23 that, to be honest.  
24 Q Okay. Do you know whether or not the American  
25 Psychiatric Association recognizes excited delirium?

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1 Q You do know that in the medical community some  
2 people do not recognize excited delirium as a diagnosis?  
3 A I do believe that, yes.  
4 Q Okay. And why is that, do you think, if you  
5 know?  
6 A I really don't know why they don't.  
7 Q And I'm not really playing a game of semantics,  
8 but is there a difference between delirium as defined in  
9 the literature versus excited delirium?  
10 A There would be a difference in definition.  
11 Q Okay. Tell me how you as an expert in  
12 emergency room medicine sees the distinction. Explain  
13 the difference to me.  
14 A Sure. If you here today became encephalopathic  
15 or got meningitis that affected your ability to think,  
16 you could certainly be delusional, have delusions, be  
17 disoriented, not quite following commands, confused  
18 intermittently, but not necessarily be excited delirium  
19 or excited delusional, in a sense. So you can have  
20 delirium without the excitation component which is the  
21 part where you sort of get the increased heart rates,  
22 the temperature, the aggression, the physical activity,  
23 the agitation, all that type of component. So it's more  
24 than just pure delirium.  
25 Q Okay. In regard -- first of all, what are the

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1 causes of excited delirium?  
2 A Well, the traditional causes are sort of broken  
3 into two major groups. There's the drug-induced  
4 version, which is typically classically sympathomimetic  
5 medications, so the uppers, cocaine, methamphetamine,  
6 PCP and LSD.  
7 The other category is psychiatric, and it's  
8 typically untreated or undertreated; psychiatric  
9 disorders such as bipolar disorder and schizophrenia,  
10 but sometimes it can be with other types of disorders  
11 like autism with mania can certainly cause those types  
12 of things. Those are sort of the two major groups.  
13 Q What about hypoglycemia?  
14 A Hypoglycemia is a diagnosis in and of itself.  
15 So low blood sugar can certainly create symptoms of  
16 delusions or delirium, confused altered mental status,  
17 but typically does not cause the sudden death syndrome  
18 that you see with excited delirium, certainly does not  
19 typically cause hyperthermia, certainly does not  
20 typically cause -- it can cause irritation or agitated  
21 states, depending on the person, but it's its own  
22 diagnosis. It's not a cause of excited delirium. It's  
23 hypoglycemia.  
24 Q Okay. Well, have you been following the  
25 Braidwood inquiry at all?

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1 other; you don't have both.  
2 Q Okay. Well, I've been reading some literature,  
3 and again, I realize there are different opinions on  
4 this. But I've read some literature where drugs can  
5 cause it, mental illness can cause it, hypoglycemia can  
6 cause it, alcohol can cause it. Do you have an opinion  
7 as to whether or not alcohol can cause or lead into  
8 excited delirium?  
9 A I have -- alcohol withdrawal can certainly  
10 cause delirium or delirium tremens, but again, that's  
11 its own diagnosis. Excited delirium is typically a  
12 diagnosis that is made with excluding other causes,  
13 excluding the hypoglycemia, excluding the alcohol or  
14 drugs, excluding the encephalitis or meningitis. And if  
15 all those aren't there and the clinical presentation is  
16 consistent with it, either with the psychiatric disorder  
17 or drug intoxication, that's when you get your diagnosis  
18 of excited delirium.  
19 Q Okay. I had referred to you the Bozeman study  
20 earlier. And on page 3 under Findings --  
21 A I returned that to you, sorry.  
22 Q Okay. I'll let you read the third paragraph.  
23 Would you read that into the record as you're reading.  
24 The third from the bottom, "CED technology."  
25 A "CED technology may be a contributor to stress

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1 A I have not.  
2 Q Okay. You know there's an inquiry in Canada in  
3 regard to the Taser -- or the death associated with a  
4 Taser for that Polish immigrant?  
5 A I do -- I'm aware of that, yes.  
6 Q Okay. So you haven't read any of those  
7 transcripts?  
8 A I have not.  
9 Q It's my understanding, and I could be wrong, is  
10 that excited delirium or delirium can certainly be  
11 caused by hypoglycemia.  
12 A Delirium can, yes.  
13 Q Okay. Can excited delirium be caused by -- in  
14 other words, instead of the drug inducing it, can the  
15 low blood sugar induce it?  
16 A I have not heard that.  
17 Q Okay. What about meningitis?  
18 A Meningitis causes delirium, but as far as the  
19 excited part, the revving up of the -- the revving up of  
20 the heart rate, blood pressure, temperature, it can  
21 cause that, but it doesn't cause the physiologic  
22 changes. Yes, you can get a fever with meningitis.  
23 Yes, you can get some tachycardia with meningitis, but  
24 it's a diagnosis that excludes the excited delirium, if  
25 that makes sense. You either have one or you have the

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1 when stress is an issue related to cause of death  
2 determination. All aspects of an altercation, including  
3 verbal altercation, physical struggle or physical  
4 restraint, constitutes stress that may represent a  
5 heightened risk in individuals who have pre-existing  
6 cardiac or other significant disease. Current medical  
7 research suggests that CED deployment is not a stress of  
8 magnitude that separates it from other components of  
9 subduel."  
10 Q Now, and again, I'm trying to understand  
11 excited delirium. In this case, Dr. Vilke, in your  
12 opinion, was stress an issue related to the cause of  
13 death?  
14 A Stress -- it was not an -- it was not a  
15 component in the cause of death. I didn't hear your  
16 question straight. Was not a contributor to the cause  
17 of death, is that what you're asking me?  
18 Q Yes. Was the stress or struggle a contributor  
19 to the cause of death in this case?  
20 A Well, I don't believe stress was a cause, an  
21 indicator or cause of death in this case.  
22 Q Okay. Why not?  
23 A Because he was already in a state of  
24 acceleration to the excited delirium. He already was  
25 getting his epinephrine stores up and released, his



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1 adrenaline was up and released. The struggle itself is  
2 beyond his already running around and getting his muscle  
3 activity going there. The struggle was part of the  
4 excited delirium and it's not part of the cause of  
5 death.

6 Q Okay. Well, as I understand it, and I believe  
7 Dr. Wetli -- and you have his report there -- talked  
8 about that the struggle itself is -- let me see if I  
9 can -- I don't want to misquote anybody.

10 MS. OLIVER: What is that sound?

11 THE REPORTER: It's their system.

12 BY MR. BEDNARZ, SR.:

13 Q And feel free to refer to Dr. Wetli's report,  
14 but I took something out of his report where in his  
15 report he identifies that the probable mechanism --

16 MS. OLIVER: Just wait until he finds it, if  
17 you don't mind.

18 MR. BEDNARZ, SR.: Sure. Maybe you can find  
19 that part because he's going to have trouble finding it.  
20 (Discussion off the record.)

21 THE WITNESS: I don't see that I have it in  
22 here.

23 BY MR. BEDNARZ, SR.:

24 Q Well, let me do this in terms of a  
25 hypothetical. Meanwhile, he's trying to pull it up, so

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1 earlier we talked about catecholamines?

2 A Yes.

3 Q And epineph -- I can't even pronounce it, but  
4 you know what I'm talking about. But there is another  
5 school of thought, as I understand it, that it is the  
6 struggle itself, the physical activity and the struggle  
7 with the police that causes an increase in the lactic  
8 acidosis. Is that true or not true?

9 A Well, any exertion can cause an increase in  
10 lactic acid, lactic acidosis.

11 Q And that's what I'm getting at. I understand  
12 from Dr. Wetli's report is that he identifies the  
13 probable mechanism for the loss of his vital signs,  
14 talking about Patrick Lee, as an exaggeration of  
15 exercise physiology. For the purpose of my question,  
16 assume that's what Dr. Wetli has testified to. Would  
17 you agree or disagree with that?

18 A So if -- if you have exaggeration of exercise  
19 physiology.

20 Q Yes.

21 A So exertion, and that is certainly a component  
22 of lactic acidosis which can contribute to the sudden  
23 death, yes.

24 Q Okay. So what is -- what does that mean, an  
25 exaggeration of exercise physiology? What does that

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1 that if you do want to see it, I'll certainly give you a  
2 chance to read what it said. But as I understand what  
3 Dr. Wetli has put in his report and testified to --

4 Have you got that, Joe? Will you hand that  
5 back.

6 And maybe we should start out here. In terms  
7 of what Dr. Bozeman and his colleagues are referring to,  
8 when they talk about stress in this paragraph, what are  
9 they talking about? What is the stress that they're  
10 referring to?

11 A As I read this, if you are 70 years old,  
12 significant coronary artery disease and have angina as a  
13 baseline from mild exertion, stress could have an impact  
14 of causing some cardiac strain and irritability. Just  
15 like a major event, people have heart attacks during  
16 earthquakes because of the stress, not because of the  
17 actual physical aspect of it. And so I think that's  
18 what they're referring to in this category as a  
19 stressor.

20 Q Now, you don't have to have this underlying  
21 disease to die of excited delirium, though, correct?

22 A Underlying disease like a cardiac --

23 Q Yes.

24 A Correct.

25 Q Okay. And do you remember when we started out

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1 mean to you?

2 A To me, again, only hearing the phrase that  
3 you've commented on there, exercise physiology is what  
4 we were discussing earlier. You and I go out for a run  
5 and we have certain limits based on our physical  
6 abilities, physical -- you know, a muscle cramp and we  
7 slow down and stop. You can certainly exaggerate that  
8 by, one, being on drugs because you have lost enough  
9 feedback mechanism just from the drugs itself.

10 Secondly, with excited delirium it accentuates that  
11 more. You already have that feedback loss for certain.  
12 And then if there's a struggle going on on top of that,  
13 theoretically there could be some more lactic acid being  
14 built up just because your feedback is not allowing you  
15 to stop struggling.

16 Q And then he goes on to say, cause -- we're  
17 talking about this, an exaggeration of exercise  
18 physiology, that is caused by, and this is in quotes,  
19 the intensity of the struggle. So my question is, would  
20 you agree that in this case, in Patrick Lee's case, that  
21 the intensity of the struggle exaggerated his exercise  
22 physiology?

23 A The exertion that he had prior to that created  
24 an exercise physiology. The normal feedback would be --  
25 if you're thinking clearly, you're not delusional,

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1 you're not beyond that state where you're actually  
2 having the super-human strength, you would normally stop  
3 when you're being held with overwhelming force or Taser.  
4 He didn't do that. And so yes, there is an increase in  
5 his exercise physiology because he has continued to  
6 struggle despite what a normal non-altered person would  
7 be able to do.  
8 Q So would you agree that the struggle itself  
9 contributed to the increase in acidosis?  
10 A Well, the struggle is all part of the excited  
11 delirium. No excited delirium, no drugs, there is no  
12 struggle. So it's all part of the same issue that got  
13 him into trouble in the first place.  
14 Q Well, how do you separate the various  
15 components of the struggle? I take it you would agree  
16 that the struggle consisted of his physical activity of  
17 running?  
18 A Correct.  
19 Q His resisting, physical resistance?  
20 A Correct.  
21 Q The pepper spray?  
22 A I guess you could put that in there as a part  
23 of his whole interaction with the police officers.  
24 Q Baton strikes?  
25 A Is part of the interaction.

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1 The part that causes lactic acidosis to get to  
2 a point where his acidemia, where his blood acid level  
3 is so low that his heart stopped, was the fact that he  
4 was unable to control himself to stop fighting, stop  
5 struggling, to follow commands, to, you know, stop  
6 resisting the arrest. It's not the stuff that was  
7 applied to him, it was his own feedback issue that he  
8 had trouble with, and that's what created the acidosis.  
9 Q At some point in time he was handcuffed with  
10 his hands behind his back. What is your understanding  
11 of whether or not he continued to struggle?  
12 A I understood there was still some struggling  
13 going on at that time.  
14 Q During that struggle, Doctor, was that also  
15 part of the continued acidosis buildup?  
16 A There is always going to be a little bit of  
17 acidosis buildup once you get to a certain level, once  
18 you're building up your lactic acid, if you're still  
19 continuing to contract muscles when you no longer have  
20 the stores of glucose. It will still create it, but it  
21 won't be at the rate that you would have done if you  
22 have all your muscle groups being able to fight a little  
23 stronger.  
24 Q Well, Doctor, this is a general statement, not  
25 necessarily about Patrick Lee. In regard to sudden

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1 Q Taser applications?  
2 A Taser is all part of the -- it is part of the.  
3 Q How can you separate one from the other if  
4 they're all a contributing factor?  
5 MS. OLIVER: Object to the form.  
6 THE WITNESS: I don't believe I said they were  
7 contributing factors.  
8 BY MR. BEDNARZ, SR.:  
9 Q Well, are they part of the struggle?  
10 A They are all a part of that time period where  
11 there was a struggle. But the struggle I'm looking at  
12 is the muscular resistance, the part that builds up the  
13 lactic acid. So a baton strike is part of the struggle,  
14 but it's not -- in and of itself, a single or two or  
15 three baton strikes will not increase one's lactic  
16 acidosis. The pepper spray in and of itself is an  
17 irritant. It's going to create a little bit of stress  
18 because it hurts in painful stimuli. Certainly not  
19 going to create a lactic acidosis that's going to kill  
20 somebody; otherwise, we'd have people dying all the time  
21 from pepper spray exposures. Similar with the Taser.  
22 There's certain applications of it that causes muscle  
23 contraction. We know that. But it certainly doesn't  
24 cause sudden death or muscle contractions or  
25 rhabdomyolysis in normal hosts.

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1 death, is the restraint that is applied to people with  
2 excited delirium a factor in sudden death?  
3 A The restraint?  
4 Q Yes.  
5 A It's a hypothetical, I'm assuming. I mean, as  
6 far as handcuffs?  
7 Q Yes.  
8 A That has not been shown to be an independent  
9 factor to causing sudden death.  
10 Q Do you know of any -- I know the answer to  
11 that.  
12 How does the excited delirium -- in this case  
13 how did the excited delirium allow Patrick Lee to ignore  
14 the signals in his brain that normally would prevent him  
15 from overexerting himself?  
16 A How does it? I think it's part of the  
17 million-dollar question of why the autofeedback, the  
18 auto-regulation is not there. It's what's observed.  
19 It's what happens. But I can't give you the  
20 pathophysiology because it really hasn't been defined  
21 yet.  
22 Q At some point in time the police arrive and  
23 he's confined to this parking lot, correct?  
24 A Correct.  
25 Q Would you agree that the struggle that ensued

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1 between him and the police officers somehow contributed  
2 to his death?  
3 A That the struggle that ensued contributed to  
4 his death. Obviously the activity that he was doing,  
5 the muscle fighting and all that, had a component from  
6 the -- it's a continuum from the excited delirium  
7 causing the lactic acidosis which does lead towards the  
8 sudden cardiac arrest. Meaning -- if you're asking the  
9 question, if he didn't have a struggle with the police  
10 officers, would he have not died.  
11 Q Yes, that's exactly what I'm asking.  
12 A There are people who will still do the  
13 struggling in their own apartment, other places and have  
14 sudden death. So the question is, once you get to  
15 excited delirium, can you die without having to be  
16 encountered and struggled with by police? Yes, you can.  
17 Q And I've already got your opinion as best you  
18 can as to when he started experiencing the excited  
19 delirium?  
20 A Correct.  
21 Q Is that at the point where he was maxed out, or  
22 is there a difference?  
23 A I described it as more of a continuum. He was  
24 starting to not follow commands within the nightclub is  
25 why he got escorted out. He kept going -- moving around

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1 disregulatory phase. All that put together is excited  
2 delirium.  
3 Q At some point in time, a person with excited  
4 delirium cannot or will not follow orders?  
5 A That is typical, yes.  
6 Q And to be sure I understand, do you have an  
7 opinion as to when, if there is such a time frame, that  
8 he -- to a reasonable degree of medical certainty, when  
9 did he exhibit signs of excited delirium?  
10 A He was showing -- I think we talked about this  
11 earlier as well. Showed early signs of it when he  
12 wasn't following commands, when he was starting to show  
13 some of the aggressive behavior. It got more  
14 progressive. It started prior to the police arrival,  
15 around that time, and continued to progress at that  
16 point.  
17 Q Okay. And when you say he was revved up, I  
18 take it revved up is at the top of the cycle or is it  
19 the normal progression?  
20 A Revved up meaning he's -- he's going from  
21 increasing his heart rate, increasing his agitation,  
22 increasing his aggression or resistance, that occurs  
23 over time. So it can come up quickly, it can come up  
24 gradually, depending on the individual or the state.  
25 Q I'm reading your testimony in Rich versus The

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1 and things. He was not listening, and then he started  
2 to get a little bit more revved up. So he was in the  
3 early stages just starting to move forward. And that  
4 occurred, again, after he arrived -- after the police  
5 arrived and continued to progress.  
6 Q Okay. You've used the word "revving up" quite  
7 a few times. What does revving up mean as you use it?  
8 A As I use it, it's you start at a certain level  
9 and you keep accelerating or moving towards or  
10 progressing to a new plateau or to a new level.  
11 Q I'm sorry, I don't understand that. In other  
12 words, his delirium was getting worse?  
13 A It is progressing. The natural history is you  
14 don't just go from, you know, normal take drug, go to  
15 excited delirium. It stepwise or, you know, moves up in  
16 an upward pattern. So that's why I use the term  
17 "revving up." It's a progression.  
18 Q Okay. I take it at some point in time you go  
19 from delirium to excited delirium?  
20 A Delirium is a term just referring to specific  
21 mental capacity or the ability to make thoughts of all  
22 commands, think clearly, have hallucinations or whatnot.  
23 Excited delirium is what we define as a -- as truly what  
24 we were talking about with the drugs, the psychiatric  
25 disorders and the whole delusional and autonomic

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1 City of Savannah. Do you remember giving deposition in  
2 that case?  
3 A I know I gave one. I don't remember it.  
4 Q You were asked to describe -- I'll read the  
5 question. "Now, with respect to death caused by  
6 agitated delirium, can you take me through the medical  
7 process of how it causes death to the best of your  
8 understanding?" Do you remember that question?  
9 A No, I don't.  
10 Q Okay. And you use that same frame. "The body  
11 gets sort of revved up, so to speak." And I'm reading a  
12 quote now. "And the heart rate goes up, and that's  
13 where you see the temperature can be elevated, the  
14 sweatiness, the agitation, hallucinations, the odd or  
15 untypical behavior, everything from being destructive to  
16 being out of control." And then you went to progress  
17 and talk about eventually goes into an irregular rhythm,  
18 the heart goes into an irregular rhythm. Is there a  
19 point in time when you have full-blown excited delirium?  
20 In other words, this revving-up process?  
21 A Again, it's back to -- it's a continuum. So  
22 full-blown is sort of like saying full-blown HIV. You  
23 have it, but it can be worse stages of it. I think it's  
24 similar to this. You can have excited delirium that may  
25 not be as aggressive, may not be as violent, but you



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1 have all the signs and symptoms of it to the kind where  
2 you have people fighting, you know, 10 police officers  
3 and they're sweating and they're clearly hot to touch.  
4 So I don't think there's a full-blown versus, you know,  
5 different degree, stage one, stage two. You're  
6 exhibiting signs or you're not.  
7 Q Okay. Let me ask you this, Doctor: This  
8 parking lot was pretty well sealed off except for one or  
9 two places that could have been blocked?  
10 MS. OLIVER: Object to the form.  
11 BY MR. BEDNARZ, SR.:  
12 Q Do you have an opinion to a reasonable degree  
13 of medical certainty what would have happened if they  
14 would have just blocked the entrances and allowed  
15 Patrick Lee to do whatever he wanted to --  
16 MS. OLIVER: Object to the form.  
17 BY MR. BEDNARZ, SR.:  
18 Q -- until the paramedics arose -- arrived?  
19 A Do I have a -- that's an interesting question  
20 in the sense that, you know, the natural history for  
21 excited delirium is to continue to be disoriented, to be  
22 aggressive. Do I know what he would have done? I can  
23 tell you things that people have done in these certain  
24 circumstances when police have allowed them to try to  
25 have some space and room. They'll jump over cars,

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1 gave.  
2 A The literature I've talked about is people who  
3 have these behaviors, my own personal experience,  
4 somebody with the best medical care available in the  
5 emergency department still died. The dye gets cast.  
6 Pre-hospital cases, they're all treated the same. A  
7 certain percentage are going to die despite the care  
8 that they get, because the progression is to the point  
9 where they may have used drugs before, may have used it  
10 chronically, but that day was the day they went to  
11 excited delirium, and at that day they got about a  
12 10-percent risk, based on our best medical knowledge, of  
13 having that sudden death.  
14 Q Would you agree that Dr. Wetli and Dr. DiMaio  
15 have the most authoritative or detailed studies on  
16 excited delirium?  
17 A What do you define as a study? They have case  
18 series. They have evaluations of autopsies. But as far  
19 as true studies, there are really no studies on excited  
20 delirium because it's a model you can't reproduce.  
21 Q Well, Doctor, certainly in acquiring knowledge  
22 about excited delirium, you at some point in time have  
23 gone to the literature to study excited delirium,  
24 haven't you?  
25 A I have.

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1 they'll start hitting themselves and hurting themselves.  
2 I can't say what Patrick would have done, but from other  
3 cases, I can certainly say that police have backed off  
4 and the person does not calm down, just take a seat and  
5 relax, wait for the paramedics. They continue to have  
6 the aggressive or agitated or irritated or irrational  
7 behavior.  
8 Q Okay. Well, do you have an opinion one way or  
9 the other to a reasonable degree of medical certainty?  
10 A Based on other cases, my opinion was that he  
11 would continue to exhibit the behavior, the irrational  
12 or irritated behavior that he had.  
13 Q Would it, in your opinion, progress to death?  
14 A Would it progress to death? Now my opinion is  
15 yes.  
16 Q And what do you base that on, Doctor?  
17 A Based on the fact that he died.  
18 Q So as I understand your opinion then, that it  
19 was inevitable; in other words, even before the first  
20 Taser application, even if Mr. Lee had been left alone,  
21 he was going to die?  
22 A That is the best medical knowledge that we have  
23 on this topic, yes.  
24 Q And tell me what literature you consider to  
25 substantiate this best medical knowledge that you just

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1 Q And what has been the most important  
2 contributor to this knowledge that you have about  
3 excited delirium?  
4 A What has been or who has been?  
5 Q Both. What literature and what individual.  
6 A Well, obviously Wetli and DiMaio are well  
7 published on the topic of excited delirium. They have  
8 done a lot of research in those areas in the sense of  
9 looking at their autopsy cases and reviews. When you  
10 said scientific knowledge or scientific studies, I just  
11 wanted to be clear that it's not a randomized trial or  
12 evaluation.  
13 Q Okay. What other literature would you -- I  
14 take it you rely on what you read from Wetli and DiMaio?  
15 A I have used that as part of my knowledge base,  
16 yes.  
17 Q Okay. What other significant literature have  
18 you relied on in forming your opinions?  
19 A Again, the term "rely." I use my knowledge  
20 base I've developed over time. So I've read basically  
21 anything I can get my hands on about excited delirium.  
22 I can't remember specific authors. I do have some  
23 papers I read years ago, but they're all sort of along  
24 the same lines: Cocaine, methamphetamine, you get  
25 revved up; sometimes you see hyperthermia, the same



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1 things you've been hearing about before. So there's --  
2 but as far as science or actual research that looks at  
3 an animal model or a human model, that's not available.  
4 Q Okay. Well, I'm sure at trial you will talk  
5 about what you have read and what you rely on, and I  
6 just want to be sure that if you're going to name any  
7 specific studies or specific authors other than Wetli  
8 and DiMaio, then I would like to know it.  
9 A I have nobody else to offer you.  
10 Q Okay. And you -- it is your -- is it your  
11 belief that Wetli and DiMaio stand for the proposition  
12 or support your opinion that the dye was already cast  
13 before any Taser applications?  
14 A I actually don't know what their pure opinions  
15 are. I haven't read their -- read their trial -- I'm  
16 sorry, their deposition testimony. But it's my opinion  
17 that the dye had been cast.  
18 Q And bottom line then, anything that happened  
19 after that in your opinion had no bearing on his death?  
20 A Correct.  
21 Q Okay. So whether he was Tased 19 times, three  
22 times, 19 times or 100 times would not have affected the  
23 outcome?  
24 MS. OLIVER: Object to the form.  
25 THE WITNESS: The -- the best knowledge is that

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1 time, restrain him, police start sedating -- or  
2 paramedics start sedating him, and the way he had the  
3 sudden arrest despite this period of time in there, he  
4 was already in a downward spiral with regard to his  
5 acidemia.  
6 Q So he already had, in your opinion, that level  
7 of acidemia that would have contributed to his death  
8 even at that early stage?  
9 MS. OLIVER: At what stage? I guess I'm a  
10 little confused.  
11 BY MR. BEDNARZ, SR.:  
12 Q Okay. Before any Taser applications. In other  
13 words, this went all the way back to what I had -- my  
14 initial question was premised on the fact that if we  
15 blocked the entrances where he couldn't escape and there  
16 was no struggle with the police, it was -- it is still  
17 your opinion he would have died?  
18 A Because at some point he would have had to  
19 interact with somebody to get treatment. So there's  
20 always going to be a struggle with police, or he'll just  
21 rev up until he has to be, you know, interacted. I  
22 think it's an unrealistic hypothetical in the sense that  
23 you're expecting EMS to come and start treating him when  
24 he's still going to have a struggle and restraint, and  
25 that's what I'm getting at. There's no way he's just

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1 these people will die whether you get them in custody  
2 and treated very quickly or not. We try to do that, but  
3 the reality is, no matter how well or how difficult it  
4 is to get these individuals into treatment custody, in a  
5 sense, a certain percentage are going to die and it  
6 doesn't seem to be reversible.  
7 BY MR. BEDNARZ, SR.:  
8 Q But I want to be sure I understand. In this  
9 case, Patrick Lee, to a reasonable degree of medical  
10 certainty, in your opinion, would have died anyway?  
11 A Correct.  
12 Q Okay. And you've -- this is going to save me a  
13 lot of questions on --  
14 What is it about Patrick Lee that would have,  
15 at that point in time -- in other words, what is it  
16 about the Patrick Lee case that allows you to say that  
17 the dye was cast that early?  
18 A That he died. Ultimately he died. He did --  
19 he had a struggle, however you want to look at it, an  
20 average type struggle. He had some Taser activations,  
21 but he didn't have a 45-minute chase around the block  
22 fight with multiple police officers in a confined time  
23 period, on average. And -- at least in looking at other  
24 cases. And then ultimately his pH was very low and he  
25 died. So if they had the opportunity to Taser him one

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1 going to sit down and say, "Please put an IV into me and  
2 give me some benzodiazepines to treat me." There's  
3 going to be a struggle. He's not going to just calm  
4 down on his own.  
5 Q And isn't that true with all people that have  
6 excited delirium?  
7 A Is what true, I'm sorry?  
8 Q That they're going to continue, that they're  
9 going to struggle, continue to struggle?  
10 A That's why the police typically get called for  
11 these cases.  
12 Q Okay. Well, you told me that they only had a  
13 10-percent mortality rate.  
14 A Estimate. Based on the knowledge -- the best  
15 knowledge we have as far as the pre-hospital data,  
16 correct.  
17 Q Well, it stands to reason to me then that even  
18 using your percentages, Patrick Lee would have had at  
19 least a 90-percent chance of survival if the police had  
20 not hit him with the Tasers.  
21 MR. BROWN: Object to the form.  
22 THE WITNESS: What I said was that once you go  
23 into excited delirium, once you get to that point, which  
24 he was in, you have a -- you have a 10-percent chance of  
25 sudden death. I didn't say it's reversible based on

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1 amount of police activity or Taser use. It's basically  
2 people come in, they have -- they exhibit it, and a  
3 number of them will -- a number of them, a percentage,  
4 we said about 10 percent will die despite our best  
5 medical efforts, whether it's in the emergency  
6 department, the back of an ambulance or on the streets,  
7 you know, during a struggle or restraint with police  
8 officers.

9 BY MR. BEDNARZ, SR.:

10 Q And my question is, what caused you to put  
11 Patrick Lee in that 10-percent category before he was  
12 ever Tased?

13 A Because our knowledge now is that he had  
14 excited delirium signs and symptoms and he died. He was  
15 in the 10 percent. He fell into the 10-percent category  
16 that died. He was already -- he had gotten to the state  
17 and he had his cardiac arrest.

18 Q Okay. Therefore, all of that extra exercise,  
19 struggle and everything else just really did not affect  
20 the outcome?

21 A There's always going to be a struggle. That's  
22 what I'm saying. And so whether it was a little  
23 struggle or not, he was predestined to have his cardiac  
24 arrest. There's going to be a struggle. There's not  
25 going to be a guy laying down and rolling over for you

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1 status, sort of look at it as a medical emergency, as we  
2 talked earlier. We want to make sure it's not  
3 hypoglycemia. That's obviously treated differently. I  
4 want to make sure it's -- but if it appears to be drug  
5 intoxication with signs and symptoms consistent with  
6 excited delirium, then there are protocols in place that  
7 they can treat with sedation medications.

8 Q Okay. Any standing orders about administering  
9 the Haldol or Verset or some type of sedatives?

10 A Our paramedics do not carry Haldol in the  
11 field.

12 Q Okay. What are your standing orders to  
13 paramedics when they're confronted with a situation like  
14 that?

15 A Our protocols have recently changed with the  
16 new medical director. But as far as the treatment of  
17 altered mental status consistent with drug intoxication,  
18 they have the ability to give Medazalan or Verset --  
19 Medazalan or Verset as a medication. And I'm not -- I  
20 don't know if it's still a standing order or if it has  
21 been moved to a base hospital, but they have that  
22 medication available.

23 Q In terms of the pH levels of Mr. Lee that were  
24 taken when he arrived at Vanderbilt, what is your  
25 opinion as to the cause of that low pH?

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1 once they get to that stage, and because of that, he's  
2 going to have his cardiac arrest.

3 Q Do you have an opinion as to whether or not  
4 people die of excited delirium because they have become  
5 too acidotic?

6 A Because they have become too acidotic?

7 Acidosis potentially plays a role into it.

8 Q Is that part of the mechanism of death  
9 necessarily in excited delirium?

10 A Well, again, we talked about the  
11 auto-regulatory issues, the unable to give feedback, to  
12 stop the phase that we're struggling through, the  
13 hyperthermia, the lactic acidosis from struggle. It's  
14 all part of what happens when you get to excited  
15 delirium. Exact mechanism what makes that heart stop  
16 may be an irregular heartbeat from the acidosis, it may  
17 be an irregular heartbeat from the elevated adrenaline  
18 stores, may be a combination of that.

19 Q Do you teach EMTs how to handle people with  
20 excited delirium in the field?

21 A We do -- we teach our paramedics, yes.

22 Q Do they have certain standing orders as to what  
23 to do if they are confronted with someone with excited  
24 delirium?

25 A Excited -- we look at it as an altered mental

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1 A Part of that is the lactic acidosis and the  
2 drugs, and part of it may be due to the cardiac arrest.

3 Q Do you have any opinion as to what percentage  
4 of it was prior to the arrest?

5 A I don't.

6 Q More? Do you have an opinion as to whether or  
7 not more of it was there or less of it?

8 A Meaning it was -- it was lower prior to or  
9 after the -- I don't really have a strong opinion on  
10 that.

11 Q Okay. Doctor, if you would turn to your Review  
12 of Lee records. Tell me, if you would, how you went  
13 about creating this document.

14 A Sure. Basically I make a list of a lot -- the  
15 paperwork that I receive as far as depositions or  
16 reports. And then as I go through them, if there's  
17 something particularly striking in the sense that I may  
18 need it for my own report, I may write it out. If it's  
19 redundant, I don't necessarily rewrite it out. So a lot  
20 of what you're seeing there may be something I noted the  
21 first time.

22 Q Okay. Now, when you say "write it out," do you  
23 actually take handwritten notes?

24 A No. I write it out, meaning type it on the  
25 computer.

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1 Q Okay. Would this document have been created  
2 all at the same time, or did you just go through it in a  
3 chronological fashion here and add to it?  
4 A It's all over the place, as far as that goes.  
5 The -- probably the thing that was created in the first  
6 place was the full list, and then as I went through  
7 different parts of it, I would fill in gaps as need be.  
8 Q And tell me what you decided to put in here.  
9 In other words, would it be the places within that  
10 deposition or statement that you consider to be  
11 significant to your opinions?  
12 A Things that would be significant to be able to  
13 recall for -- more for my report writing and my opinion,  
14 yes.  
15 Q Okay. The first thing you have in this that I  
16 want to ask you about is in quotation marks, you have  
17 "super-human strength." What evidence do you have,  
18 after reading all of this literature, that Patrick Lee  
19 exhibited super-human strength?  
20 A It came up in one of the depositions somewhere  
21 and I just noted it down.  
22 Q Okay. Other than a police officer saying he  
23 had super-human strength, did you read anything about  
24 any physical contact that would demonstrate anything  
25 even close to super-human strength?

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1 MR. BEDNARZ, SR.: Well, yeah.  
2 Q So Dana Brinkley was a man. I'm going to help  
3 you out here. It's my understanding he was the first --  
4 he was not the first EMT on the scene, but the first  
5 that actually made contact with Mr. Lee. Is that your  
6 recollection?  
7 A I'd have to -- I think that's right, but I'd  
8 have to double check.  
9 Q Is there anything that you've documented under  
10 Dana Brinkley that is significant to your opinions?  
11 A Again, the running naked is -- is notable.  
12 Smelled like pepper but didn't cough, basically it's --  
13 again, I noted it, but it's not changing or affecting my  
14 opinions strongly.  
15 Q I take it your opinions would be the same if  
16 you had not read any of the depositions of these next  
17 five people where you don't put anything under it?  
18 A Or there was no new information that changed  
19 any of my -- my opinions.  
20 Q Candace Coffee. What is it in these entries,  
21 page numbers and line numbers that support your opinion  
22 or that are significant to your opinion?  
23 A It's a witness commented on the naked, scared  
24 and freaked out, which would be consistent with, you  
25 know, the signs and symptoms of excited delirium.

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1 A Again, I just -- I'm reporting what I read in  
2 the deposition. So the police officer reporting that  
3 has some credence in my mind because they're used to  
4 taking care of subjects.  
5 Q Well, do you recall seeing -- first of all, is  
6 super-human strength a sign of excited delirium?  
7 A It can be. It's not a classic sign. It's more  
8 of a sign of the intoxication or a, you know,  
9 significant involvement of a drug.  
10 Q Okay. Whether he had super-human strength or  
11 not -- in other words, let's assume he didn't have  
12 super-human strength -- would that affect your opinion  
13 in any way?  
14 A It would not change it, no.  
15 Q Okay. Deposition of Dana Brinkley. Was she  
16 the first or second EMT on the scene, do you remember?  
17 MR. BROWN: That is a man, Mr. B.  
18 MR. BEDNARZ, SR.: I'm sorry?  
19 MR. BROWN: That is a man, a male.  
20 MR. BEDNARZ, SR.: Oh, it is? Dana. Seemed  
21 like a girl's name.  
22 MR. BROWN: You could take it up with him.  
23 MR. BEDNARZ, SR.: Okay.  
24 MR. BEDNARZ, JR.: I think you were just  
25 reading off of that --

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1 Looked like he could get away but then did not, like he  
2 was taunting, either because he was confused or  
3 delirious. Not a typical pattern. If you get away,  
4 usually you get away. Swatting at things that were not  
5 there could be consistent with hallucinations. And fell  
6 four times with the Taser obviously lets me know that  
7 there were some Taser activations that were effective.  
8 Q Is she also a witness that described long  
9 periods of time after falling, as much as 10 seconds,  
10 and everybody would just stand there and wait for him to  
11 get back up?  
12 MS. OLIVER: Object to the form.  
13 THE WITNESS: I don't recall specifically.  
14 BY MR. BEDNARZ, SR.:  
15 Q Okay. Would that be something that would be  
16 important to your opinion, to try to determine how much  
17 time elapsed between Taser applications?  
18 A I think part of the way to look between Taser  
19 applications is also looking at the downloads of the  
20 Taser which were available. This could corroborate some  
21 of it, although time episodes by human recall are  
22 sometimes off.  
23 Q Are you familiar with the window of opportunity  
24 that is discussed in regard to the Taser application?  
25 A I'm not sure what you're referring to.

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1 Q The window of opportunity. So that whenever  
2 somebody is Tased, there's supposed to be some window of  
3 opportunity to restrain the person.  
4 A There are certain tactics. Clearly when a  
5 Taser is being deployed is your window of opportunity.  
6 Typically when you stop the Taser, the subject is  
7 immediately available to do whatever they would like  
8 again, so they're no longer being incapacitated.  
9 There's no delay effects.  
10 Q The next one I'm going to ask you a question  
11 about is the deposition of Laura Hitchcock, an engine  
12 medic, and they talk about ankles restrained. Tell me  
13 what your understanding is, Doctor, of the way Mr. Lee  
14 was restrained after he was handcuffed.  
15 A He was handcuffed with his hands behind his  
16 back, and according to this, he had his ankles  
17 restrained.  
18 Q Okay. How was his ankles restrained?  
19 A I actually don't recall how they were  
20 specifically restrained.  
21 Q Well, you have an opinion on asphyxia or the  
22 lack of asphyxia in this case, correct?  
23 A Correct.  
24 Q Is it important to your opinions to know how  
25 Mr. Lee was actually restrained after he was handcuffed?

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1 Q Okay. So they would have to actually be the  
2 legs shackled to the handcuffs?  
3 A Right. The knees would have to be bent up and  
4 pulled towards the head.  
5 MS. OLIVER: In a hogtie, basically?  
6 THE WITNESS: Hogtie or hobbled, it's  
7 synonymous, yes.  
8 BY MR. BEDNARZ, SR.:  
9 Q Now, if the legs were strapped and being held  
10 up in that same position without actually being tied,  
11 would that still be a hogtied position?  
12 A By definition it's not hogtied, because it's  
13 not tied, but it would simulate the position of a  
14 hobble.  
15 Q Okay. And in terms of the physiological  
16 effects, whatever they may be, would you expect to see  
17 any difference?  
18 A If the legs were bent up, either held by hand  
19 or by restraint, I would not expect to see a difference.  
20 Q Now, for the purpose of this question -- well,  
21 and what is your understanding as to what -- what was  
22 happening to his legs? First of all, were they strapped  
23 or tied?  
24 A They were shackled is how I noted.  
25 Q Okay. Was a police officer holding them?

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1 A As far as the component for asphyxia, even if  
2 he was on his stomach, on his back, on his side, with or  
3 without ankles restrained, with or without them tied up,  
4 in a hobbled position wouldn't affect my opinions on  
5 asphyxia.  
6 Q Was he in a hobbled position?  
7 A I'm trying to remember that. I don't recall  
8 him being hobbled, but he certainly may have been. But  
9 again, it wouldn't --  
10 Q And feel free to review any of your notes that  
11 you need to.  
12 A Yeah, I don't -- I didn't -- when I reviewed  
13 it, I did not get the impression that he had actually  
14 been hobbled. He had just been restrained by hands  
15 behind his back and legs shackled, but not necessarily  
16 pulled up in an upward fashion.  
17 MR. BROWN: I think we need a definition here,  
18 if I could just suggest that, Mr. B.  
19 MR. BEDNARZ, SR.: Sure.  
20 MR. BROWN: I think we're talking about two  
21 different things.  
22 BY MR. BEDNARZ, SR.:  
23 Q What is your definition of hobbled?  
24 A Hands handcuffed behind the back and the legs  
25 shackled and attached to the handcuffs.

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1 A I do not recall.  
2 Q Does that mean you would not -- also not recall  
3 if the police officer had raised his legs?  
4 A That would be correct.  
5 Q Okay. So that would not have any bearing -- I  
6 take it it would not be important to your opinions then  
7 as to whether or not any kind of hypoxia or asphyxia  
8 occurred in this case?  
9 A Whether he raised his legs or not would not  
10 impact that, correct.  
11 Q What is your understanding of how else he was  
12 restrained?  
13 A There was some people holding him down at times  
14 during the -- during the restraint process.  
15 Q And where did you get that information from?  
16 A I believe from some of the depositions.  
17 Q Okay. I notice you didn't have anything for  
18 Officer Cregan under your -- let me see -- Officer  
19 Cregan over on the next page, you did read the statement  
20 of Officer Cregan?  
21 A I have -- I read through everything, correct.  
22 Q Did you not find anything in Officer Cregan's  
23 statement that would be significant to any of the  
24 opinions that you're expressing?  
25 A Not that I recall that -- that was different or



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1 novel compared to the other.  
2 Q Would you agree that at the time he was  
3 actually restrained in handcuffs on his back and put in  
4 a prone position, that he was acidotic?  
5 A He was acidotic. He was likely acidotic, yes.  
6 Q And would you agree that it would be important  
7 for him to be able to breathe in order to clear his  
8 system of carbon dioxide?  
9 A Well, as far as he was probably already  
10 hyperventilating from his activity, but it's always  
11 important to be able to breathe.  
12 Q And when you use the word "asphyxia" -- now, in  
13 this case I understand your opinion is he did not suffer  
14 from asphyxia, correct?  
15 A Correct.  
16 Q Do you have an opinion to a reasonable degree  
17 of medical certainty as to whether or not during the  
18 time he was restrained, he suffered from hypoxia?  
19 A During the time he was restrained, during --  
20 well, he was breathing. He was not -- there would be no  
21 evidence for hypoxia at that time.  
22 Q Okay. How do you define hypoxia?  
23 A Basically low oxygenation of the red blood  
24 cells of the circulation.  
25 Q Is it your opinion --

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1 they can cuff them, it's anywhere from -- it's a  
2 general, when you try to measure it out on a scale,  
3 somewhere around 50, 60 pounds.  
4 Q And that would be if there were several of them  
5 holding down, putting pressure on him?  
6 A Sort of, yeah, leaning to the side there,  
7 because most people do not sit on them because you fall  
8 off. And so they stay off to the side and then use  
9 pressure downwards.  
10 Q When a person is in this prone position and  
11 handcuffed behind the back, and if they're having  
12 pressure put anywhere on their back, is there any  
13 difference as to whether or not it's high or low?  
14 MS. OLIVER: High on the back or --  
15 MR. BEDNARZ, SR.: Yes.  
16 THE WITNESS: So as far as meaning if you're  
17 pushing on the buttocks, it probably has less of an  
18 impact than if you're pushing mid-back straight down.  
19 BY MR. BEDNARZ, SR.:  
20 Q Okay. Mid-back straight down pressure would be  
21 worse than low back?  
22 A I wouldn't say worse. It would have -- it  
23 potentially would have more of an impact.  
24 Q Okay. Does it matter whether or not your  
25 shoulders are actually pinned to the ground?

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1 A Red blood cells of the circulation.  
2 Q Is it your opinion that during this restraint,  
3 he was able to breathe and ventilate completely as a  
4 normal person?  
5 A Being in the restraining -- in the prone,  
6 handcuffed behind, he would be able to ventilate as well  
7 as need be for a normal person.  
8 Q And what do you base that on, just the  
9 statements of the witnesses or what?  
10 A That the data shows that a restrained position  
11 on your -- a prone position does not impede one's  
12 ability to ventilate.  
13 Q Okay. Are you talking about your studies?  
14 A Yes.  
15 Q Do you know whether or not a police officer was  
16 kneeling on his back?  
17 A I know there was some pressure being put on his  
18 back at intermittent times during the restraining  
19 process.  
20 Q How much pressure, Doctor?  
21 A In pounds, I can't answer that question. But  
22 as far as I recall, there were certain kneelings or  
23 pushings of the hands, but not -- which is typical for  
24 any restraining process. And so typically when an  
25 officer is leaning or pushing to hold somebody down so

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1 A Does it matter if your shoulders --  
2 Q In terms of your ability to ventilate. In  
3 other words, if you have somebody in a prone position  
4 and their shoulders were all the way down on the ground  
5 as opposed to somebody whose shoulders were raised up,  
6 would there be any difference in their ability to  
7 breathe?  
8 A As far as, depending on the amount of weight  
9 and the duration of time and the consistency of time.  
10 So if you put 500 pounds in my mid-back, it's -- and  
11 leave it there, it's going to have an impact. If you  
12 put, you know, 500 pounds on my shoulders, it's going to  
13 have an impact. If you put 50 pounds on either place,  
14 it's not going to have any impact no matter where you  
15 put it.  
16 Q Okay. I take it in this case before arriving  
17 at your opinion that asphyxia or hypoxia did not occur,  
18 that you took into consideration all of the statements  
19 of the witnesses and police officers, correct?  
20 A That is correct.  
21 Q Do you have an opinion as to how much weight  
22 would have had to have been placed on Patrick Lee's back  
23 in order for him to be unable to ventilate properly?  
24 A I was not trying to calculate how much weight  
25 needed to be there. I was trying to estimate how much

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1 weight and for what duration of time was actually there  
2 to see if it would have an impact on his ventilatory  
3 drive.

4 Q Okay. Let me ask for the purpose of this  
5 question to assume that one of the police officers  
6 actually kneeled on his back, had one knee on his upper  
7 shoulders and the other on his lower back, and assume  
8 that he was putting all of his weight on Patrick Lee.

9 Do you have an -- would that change your opinion?

10 A That would not change my opinion.

11 Q Why not?

12 A Unless he kept it there for a prolonged period  
13 of time and was able to keep him from talking and moving  
14 and wiggling, which was not the case by the reports,  
15 that doesn't have an impact on your ability to breathe.

16 Q What do you mean, prolonged period of time?

17 A Ten minutes.

18 Q If -- if a police officer was to stay on  
19 Patrick Lee's back in that position for as much as  
20 10 minutes, would you agree that he would probably have  
21 experienced some form of hypoxia?

22 A No.

23 Q Why not?

24 A Because typically a person will be able to  
25 wiggle and move and get air in. It may impact some of

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1 the ventilatory drive. You won't be able to breathe as  
2 deeply, but it should not cause hypoxia.

3 Q In terms of -- now, we have Patrick Lee and we  
4 agree that he was suffering from acidosis and he needed  
5 to breathe in order to clear his system, correct?

6 A I did say he needed to breathe and clear his  
7 system. Everybody needs to breathe. His acidosis was  
8 not based on retained carbon dioxide, it was based on  
9 lactic acid.

10 Q Well, did this lactic acid, from whatever  
11 cause, was it continuing to build even after he was  
12 handcuffed?

13 A Typically lactic acid will continue for a  
14 period as he's resisting restraint, yes.

15 Q And it would continue to increase even if he  
16 wasn't -- even if he was breathing properly?

17 A Lactic acid would continue to increase. The  
18 breathing has no impact on that.

19 Q If his breathing was impaired to any degree at  
20 all, would that somehow complicate or increase his  
21 chances of not recovering from the acidosis?

22 A No.

23 Q Why not?

24 A You've given me a hypothetical. If I decrease  
25 your ability to ventilate or his ability to ventilate by

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1 5 percent, it's not going to make him hypoxic and it's  
2 not going to make him retain CO2, because we have great  
3 ventilatory stores in our lungs, which is why people can  
4 have a lung taken out and still not become ventilatory  
5 cripples in the sense of retaining CO2 or becoming  
6 hypoxic. So the stores are certainly there. So a mild  
7 degradation or even a slight decrease in percentage of  
8 ventilatory capacity doesn't cause a physiologic or a  
9 measurable difference in CO2 or oxygen -- or oxygen  
10 availability.

11 Q You're talking about the body's reserves?

12 A The pulmonary reserves, yes.

13 Q And it would be your opinion then that he had  
14 sufficient reserves available to him at that time that  
15 even if he had weight on his back, it would not --  
16 that's a terrible question.

17 Do you know Dr. Ho?

18 A I do.

19 Q You respect his opinions in this area,  
20 generally?

21 A Generally, yes.

22 Q I have an article that he wrote in Police  
23 Magazine. Have you ever written any -- anything for  
24 this publication?

25 A I don't believe I have.

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1 Q And I'm just trying to understand your opinion.  
2 And sometimes I have to refer to something to see if you  
3 agree or disagree because I don't -- I'm not good enough  
4 to ask the right questions.

5 But under Restraint and Positionalized  
6 Asphyxia, he states, "Metabolic acidosis is deadly, and  
7 it's believed that certain other factors can worsen the  
8 condition." Do you agree with that?

9 A Certain factors can worsen acidosis, yes.

10 Q And he certainly had metabolic acidosis when he  
11 was handcuffed?

12 A Correct.

13 Q "These factors include using restrictive  
14 restraint devices such as handcuffing behind the back  
15 and/or the hobble tie, poor positioning of the person  
16 once in custody, such as laying the prisoner face down  
17 and having multiple officers on top of the person during  
18 the restraint process."

19 You agree with that?

20 A Not the whole statement no.

21 Q Okay. What do you disagree with that  
22 statement?

23 A Probably look at it so I can probably tell you  
24 line by line.

25 I'm sorry, where were you?

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1 Q Right from here up at the top in that third  
2 column.  
3 MR. BROWN: Could we say when that article was  
4 written, just for the record?  
5 MR. BEDNARZ, SR.: Sure.  
6 THE WITNESS: August 2005.  
7 So "Metabolic acidosis is deadly, and it's  
8 believed that certain other factors can worsen the  
9 condition." Agreed.  
10 "These factors include restrictive restraint  
11 devices" -- sorry -- "restrictive restraint devices such  
12 as handcuffing behind the back and/or the hobble tie."  
13 I don't agree with handcuffing behind the back causing  
14 or worsening metabolic acidosis. The hobble tie as well  
15 does not worsen metabolic acidosis.  
16 "Poor positioning once the person is in  
17 custody, such as laying the prisoner face down," again,  
18 it does not worsen metabolic acidosis.  
19 "Having multiple officers on top of the person  
20 during the restraint process," clearly that's a matter  
21 of degree. And so --  
22 BY MR. BEDNARZ, SR.:  
23 Q And what is the basis for your disagreement  
24 with Dr. Ho on that subject?  
25 A The work that we've done with regards to hobble

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1 Q Yes. And would you identify them by number or  
2 some other way?  
3 A Sure. On my C.V., article No. 14, Chan, Vilke,  
4 Neuman, "Restraint Position and Position Asphyxia."  
5 Article No. 34, Vilke, Chan, Neuman,  
6 "Spirometry in Normal Subjects in Sitting, Prone and  
7 Supine Positions."  
8 Article No. 41, Chan, Vilke, Clausen, et al.,  
9 "The Impact of Oleoresin Capsicum Spray on Respiratory  
10 Function in Human Subjects in the Sitting and Prone  
11 Maximal Restraint Positions."  
12 53, Chan, Vilke, Clausen, et al., "The Effect  
13 of Oleoresin Capsicum Pepper Spray Inhalation on  
14 Respiratory Function."  
15 81, Chan, Neuman, Clausen, "Weight Force During  
16 Prone Restraint and Respiratory Function."  
17 And 106, Michaelewicz, M-i-c-h-a-e-l-e-w-i-c-z,  
18 Chan, Vilke, et al., "Ventilatory and Metabolic Demands  
19 During Aggressive Physical Restraint in Healthy Adults."  
20 Q How many of those have been peer reviewed?  
21 A All of them have.  
22 Q Were any of these initially started because of  
23 litigation?  
24 A One case. Or one study.  
25 Q Okay. Which one was that?

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1 restraints, prone -- prone restraints, prone positioning  
2 and supine positioning.  
3 Q And name those studies. You're talking about  
4 the '99 study?  
5 A There are a couple of studies.  
6 Q Okay.  
7 A If you want me to name them, I'll have to pull  
8 the C.V. out to name those specifically. You want me to  
9 do that now?  
10 MR. BEDNARZ, SR.: Well, I think we're out of  
11 tape, so it might be a good time to take a break, and  
12 that way you can take your time with that.  
13 THE VIDEOGRAPHER: This marks the end of tape  
14 No. 2 in the deposition of Dr. Gary Vilke. Going off  
15 the record, the time is 2:46 p.m.  
16 (Recess.)  
17 THE VIDEOGRAPHER: We're back on the record.  
18 Here marks the beginning of tape No. 3 in the deposition  
19 of Dr. Gary Vilke. The time is 3:01 p.m.  
20 BY MR. BEDNARZ, SR.:  
21 Q Doctor, I believe that I -- just prior to the  
22 break I had asked you for some literature that supports  
23 your opinions in regard to this hypoxia or asphyxia.  
24 Have you had a chance to look at your publications?  
25 A Yes, I went through my C.V.

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1 A The very first one.  
2 Q No. 14?  
3 A I believe so, yes.  
4 Q Is that the one going back to 1999?  
5 A It was published in '97. The work was done in  
6 '95 and '96.  
7 Q And I'm going back to this article which I'll  
8 identify for the record. This is -- the name of the  
9 magazine is "Police, The Law Enforcement Magazine," and  
10 it's dated August 2005. And this is the article by  
11 Dr. Ho.  
12 And then it goes on in the next paragraph, and  
13 I'm going to ask if you agree or disagree. "All of  
14 these things have the potential to restrict a person's  
15 ability to take normal breaths." Agree or disagree?  
16 A I think we're referring back to the handcuffs,  
17 the handcuffs behind the back, and I think I've already  
18 disagreed that I feel that has any -- that they have  
19 significant effects on ventilatory function.  
20 Q "Since breathing is the primary method of  
21 ridding the body of waste factors quickly, it stands to  
22 reason that restricting this process can injure or kill  
23 somebody." Do you agree or disagree with that  
24 statement?  
25 A In and of itself, restriction of somebody's

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1 the hobble tie would be handcuffed behind the back and  
2 the legs secured but not attached to the --  
3 MR. BROWN: Not pulled up above the buttocks,  
4 not pulled up behind him.

5 MR. BEDNARZ, SR.: Then if we talk about  
6 hogtie, then they're actually tied up.

7 MR. BROWN: Thank you. I'm sorry.

8 MR. BEDNARZ, SR.: That's okay.

9 Q But while we're on that subject, would there be  
10 any difference in a person's ability to breathe, in your  
11 opinion, whether they were hobble tied or hoottied?

12 A Neither affect ventilatory function.

13 Q So it wouldn't matter anyway to you?

14 A Correct.

15 Q Okay. And then it goes on, he goes on to say,

16 "But the medical community is torn on the issue of  
17 positioning and restraints as contributing factors in  
18 the sudden death of people in custody because there have  
19 been studies demonstrating variable effects of these  
20 factors on the process of metabolic acidosis."

21 Agree or disagree?

22 A I agree that people don't agree; otherwise,  
23 there wouldn't be all the opposing medical exp  
24 lawsuits.

25 Q I've run across an interesting article. It's

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1 said both excited delirium and so-called positional or  
2 restraint asphyxia are real, but no definitive test  
3 exists for either."

4 Is that -- do you have any reason to agree or  
5 disagree with her saying that you said that?

6 A Well, I've certainly said that excited delirium  
7 is real, and I said there is -- there is a phenomenon of  
8 positional asphyxia. And I've gone on to describe that  
9 as the case would be a person working underneath their  
10 car, the jack collapses, the car goes on their chest,  
11 restricts them from breathing and causes them to  
12 asphyxiate. So they are in a position where they can  
13 asphyxiate, so positional asphyxia.

14 Or I've also published work on car crashes

15 where people are restrained with a restraint device,  
16 seat belt, in a position that restricted them from  
17 breathing and causes a restraint asphyxia. But not in  
18 the terms of the police using handcuffs in a hobble or  
19 hogtie position.

20 Q I think I've also seen reference to you

21 somewhere, maybe in your deposition testimony or  
22 something, about mechanical asphyxia. Is there such a  
23 thing?

24 A Mechanical is -- I use that in some ways

25 interchangeably with the position. You're in a position

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1 that can cause you to asphyxiate, or you can have a  
2 mechanism that puts you -- for example, a car would be a  
3 mechanical asphyxia that's holding you down.  
4 Q If -- and this is totally a hypothetical. If a  
5 person was hobble tied and then you did put 3 or  
6 400 pounds on his back where he couldn't breathe, would  
7 that be -- fall under positional -- and he was  
8 asphyxiated, would that be positional or restraint?  
9 A You could probably use it either way. But my  
10 definition, you know, it's the position that puts them  
11 at risk for the asphyxia, but also they're being  
12 restrained.  
13 Q And they also say that you said no definitive  
14 test exists for either. And they're talking about the  
15 restraint asphyxia and the excited delirium.  
16 A So we've discussed there is no pure test to say  
17 this person had excited delirium or not at this stage.  
18 And with restraint asphyxia, it is -- there's not a test  
19 that's done. It's a findings -- the findings of the  
20 things that led up to that death.  
21 Q Okay. The best we can do on the excited  
22 delirium is really DiMaio and Wetli?  
23 A Best we can do as far as what?  
24 Q As coming up with some type of test for whether  
25 or not a person is experiencing excited delirium.

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1 what context that was pulled out, to be honest. I could  
2 create something for you, but I don't know what the  
3 actual context was.  
4 Q Well, tell me as best -- in other words, if I  
5 was to ask you -- in other words, I understand -- I've  
6 read the literature on excited delirium. I read the  
7 literature on positional asphyxia, and I realize the  
8 extremes. And the way I was interpreting this was to  
9 say there's truth on both sides. I mean -- and that's  
10 the way I'm reading it. Tell me what your explanation  
11 would be.  
12 A Right. Again, I'm not sure of the context  
13 where that quote came from. May I see it again?  
14 Q Sure.  
15 A It says, "Some people like to say they're all  
16 this." Again, I assume I'm referring to some experts  
17 saying it's purely one diagnosis versus another.  
18 "Others like to say it's excited delirium." And again,  
19 I'm not sure where I'm getting that quote from, but "The  
20 truth is somewhere in the middle." I assume I'm  
21 referring to the fact that there are circumstances that  
22 bring in the excited delirium. You know, it's a pure  
23 diagnosis -- well, it's not a pure diagnosis. It's a  
24 group of symptoms that lead up to excited delirium,  
25 along with the underlying events that led up to that

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1 MS. OLIVER: Object to the form.  
2 THE WITNESS: Not a test. It's a -- it's a  
3 conglomeration of symptoms and the factors that lead up  
4 to it. So it's not Wetli or DiMaio that's defining it,  
5 it's the symptoms that define it.  
6 BY MR. BEDNARZ, SR.:  
7 Q Okay. And it's a signal?  
8 A Yes.  
9 Q Then they go on, and this is in quotes: "It's  
10 not very satisfying," and the quote, "Vilke said, 'but  
11 medical examiners have to judge each case based on  
12 limited information about the overall circumstances.'"  
13 Is that an accurate quote?  
14 A Sounds accurate.  
15 Q And then there's another quote. A lot of  
16 people say they're misquoted. I've been -- I've been  
17 quoted in the newspapers, and I -- I didn't say it.  
18 That's a misquote.  
19 "Some people like to say they're all this.  
20 Others like to say it's excited delirium." Vilke said,  
21 'The truth is somewhere in the middle.'  
22 And I guess is that an accurate way of -- in  
23 other words, if you look at the context of that.  
24 A I have no idea where that came from. I'd love  
25 to hear the rest of my -- Sarah Burge. I'm not sure

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1 point plus autopsy findings that don't show other cases  
2 of death, plus diagnosis of exclusion of hypoglycemia,  
3 meningitis, those types of things.  
4 So it's not purely this or purely that until  
5 you actually put everything together. I think that's  
6 part of where I talked earlier about the limited  
7 information. A lot of times medical examiners don't  
8 have the full field presentation; they have a body in  
9 front of them, and they didn't realize that the  
10 activities, the running around in public, sweating  
11 profusely, breaking glass, all they have was cocaine in  
12 the tox screen and a normal or negative autopsy. So I  
13 may be referring to what medical examiners are looking  
14 at.  
15 Q And in terms of the asphyxia, do we also have  
16 extremes there? Or some people say -- I've read the  
17 articles where anytime a person is hobble tied or  
18 hogtied and dies, there is an accusation against the  
19 police that they caused the death. And then we had  
20 Dr. -- was it Reay?  
21 A Yes.  
22 Q -- whose study apparently you and Dr. Chan and  
23 Dr. Neuman to some degree discredited; is that a fair  
24 way of putting that?  
25 A It's one way of putting it, sure.

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1 Q Would Dr. Reay's opinion be on one extreme?  
2 A His traditional opinion was you put somebody in  
3 a hogtie position and you leave them there, they will  
4 asphyxiate. I think his opinion has evolved since our  
5 study has come out.  
6 Q Would you agree that some people have been  
7 asphyxiated as a result of putting pressure on the back  
8 of a -- either a prisoner or somebody in custody?  
9 A Asphyxiated or death has ensued because of  
10 that.  
11 Q Death has ensued because of that.  
12 A I think that could -- I think that could have  
13 happened, yes.  
14 Q And sometimes the allegations are unfounded?  
15 A It's a hypothetical, so I can't say one way or  
16 the other.  
17 Q I've read your study, Dr. Reay's study, the  
18 letters to the editor that went back and forth. It's my  
19 understanding, correct me if I'm wrong, that Dr. Reay  
20 has stated that he has not retracted his position on  
21 positional asphyxia as a cause of death with particular  
22 reference to hogtying. Is that your understanding?  
23 A My understanding is he has commented that the  
24 hobble restraint or hogtie -- we used those,  
25 unfortunately, interchangeably when we were talking to

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1 to ask that question.  
2 BY MR. BEDNARZ, SR.:  
3 Q Okay. What -- what has -- in your  
4 understanding -- and you've studied this, positional and  
5 restraint asphyxia considerably. What has Dr. Reay's  
6 opinion evolved to?  
7 A As I stated earlier, it has evolved to that --  
8 he has commented that the position of hogtie or hobble  
9 restraint is physiologically neutral, based on our  
10 study.  
11 Q Physiologically neutral. Now, is that in only  
12 healthy individuals?  
13 A Our study was done in healthy individuals.  
14 Q How would that apply to individuals that were  
15 suffering from metabolic acidosis?  
16 A I'm not sure how Dr. Reay's opinions would be  
17 on those patients.  
18 Q Or some other way impaired, do you know --  
19 A Again, I don't know how Dr. Reay would feel  
20 about those.  
21 Q I'm going to read from Officer Jason Cregan --  
22 A Okay.  
23 Q -- his first statement. And this -- he was  
24 being asked by, I guess, Internal Investigation or a  
25 police officer by the name of Jones.

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1 Dr. Reay -- was considered physiologically neutral.  
2 Q Let me just read, and then we have the study  
3 itself exactly.  
4 MR. BEDNARZ, JR.: It's in the stack you're  
5 holding. But that's a straight quote.  
6 BY MR. BEDNARZ, SR.:  
7 Q I'm going to read. I'm reading from -- what am  
8 I reading from? I know I'm quoting Dr. Reay, but what's  
9 the article?  
10 MR. BROWN: We could go off the record, I  
11 guess. I have trouble hearing you all argue.  
12 MS. OLIVER: There's not very much paper in  
13 this case, Mr. Bednarz. I can't imagine that it's not  
14 right at your fingertips.  
15 MR. BEDNARZ, SR.: While he finds that, let me  
16 move on.  
17 MR. BEDNARZ, JR.: It's a letter that Reay  
18 wrote.  
19 BY MR. BEDNARZ, SR.:  
20 Q Okay. Do you know of any change in Dr. Reay's  
21 position since June of 1998?  
22 A I haven't really interacted with him since  
23 then.  
24 Q Okay.  
25 MR. BEDNARZ, JR.: It would be easier for you

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1 "Okay. After you get him handcuffed, what  
2 happens?"  
3 "I stayed on his back and contained him to the  
4 ground until the ambulance showed up."  
5 Cregan: "I put my right knee on his lower back  
6 and my left knee on his upper shoulders and used my body  
7 weight to contain him to the ground."  
8 Do you have an opinion as to whether or not  
9 that impaired his breathing in any way?  
10 A I was not impressed that that would  
11 specifically impair his breathing.  
12 Q Do you know how much Officer Cregan weighs?  
13 A I don't recall off the top of my head.  
14 Q Do you know approximately how long he was on  
15 his back like that?  
16 A Again, I don't recall specifically.  
17 Q Doctor, I've got to ask you some opinions -- I  
18 mean I've got to ask if you intend to express any  
19 opinion in regard to any specifics. I know you disagree  
20 with Dr. Shaw, my emergency room physician. But other  
21 than the basic disagreement, do you have any specific  
22 criticism of any of his opinions?  
23 A I'd have to rereview his opinions to recall  
24 that. In a sense I read the opinions, I smile at some  
25 of them, I agree with some and I disagree with some, but

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1 I don't -- I don't specifically remember all of them.  
2 Q The only thing you put under Ronald Shaw was  
3 that he blames repeated Taser.  
4 A Because a lot of times I read these reports,  
5 they're not going to impact my report because I'm going  
6 to form my own individual opinion. I'm not to rebut,  
7 I'm just writing it, so I don't put all my commentary in  
8 there.  
9 Q Okay. And the only thing I'm getting at, if  
10 I'm going to hear you say at trial, "Dr. Shaw said this,  
11 this and that and that's medically wrong," then I want  
12 to know it ahead of time. So that's the only reason I'm  
13 asking you. As you sit here today, do you intend to  
14 express any specific criticism, other than the fact that  
15 you have different opinions?  
16 A There's criticism if I'm differing my opinion  
17 on him. But -- so again, I haven't reread his report to  
18 try to go through things I would specifically try to  
19 critique.  
20 Q On page 30 of Dr. DiMaio's book -- I don't want  
21 to go there. It will take an extra 30 minutes.  
22 MS. OLIVER: Then please don't go there.  
23 MR. BEDNARZ, JR.: You have plenty of time.  
24 BY MR. BEDNARZ, SR.:  
25 Q I'm sure you would agree with Dr. DiMaio in

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1 person is hobbled as opposed to hogtied, is there any  
2 one place -- I may have asked you this already; if I  
3 did, just tell me I did -- that placing the weight would  
4 cause more of a problem than another place? In other  
5 words, where is the place the person is most vulnerable?  
6 A And there is no work to define position of  
7 weight and effect on ventilatory function.  
8 Q Okay. Do you have an opinion, though, as to  
9 whether or not -- as to what part of the back would be  
10 most vulnerable to weight?  
11 A The challenge to that really is how to get  
12 enough weight onto a position of the back and maintain  
13 it there for a period of time. For example, the study  
14 that we did with 220 pounds, we used birdshot which is  
15 obviously very dense, and we still had to pile it high  
16 and deep and broadly because you can't stack it up in  
17 any one position. So in order to get enough weight to  
18 actually show ventilatory changes, if there are any,  
19 would be almost impossible. A person kneeling on a back  
20 can't put their whole weight on it because all you have  
21 to do is shift a little bit and that weight is off and  
22 now you've gotten intermittent pressure, not a constant  
23 pressure. So to set the model like that is very  
24 difficult to do.  
25 Q Well, you mentioned somewhere in your report

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1 regard to restraint asphyxia, that if there was enough  
2 weight and it is placed there long enough, hypoxia will  
3 eventually result?  
4 MS. OLIVER: Object to the form.  
5 BY MR. BEDNARZ, SR.:  
6 Q It will eventually result in hypoxia?  
7 A Again, I've commented that enough weight can  
8 cause.  
9 Q As just a general rule?  
10 A Correct.  
11 Q And what is the best study out there that would  
12 tell us how much weight and for how long in order to  
13 have some form of hypoxia?  
14 A Hypoxia is sort of the secondary issue. The  
15 first issue is ventilatory failure, which means you're  
16 not breathing deep enough to blow off your carbon  
17 dioxide. And so that's the first thing you would see is  
18 retained carbon dioxide, then ventilatory failure, then  
19 hypoxia, and then death.  
20 To my knowledge, the only -- the study that has  
21 the most amount of weight looking at ventilatory  
22 function is the work we did that I referred to you in  
23 that list, and we looked at subjects of up to 220 pounds  
24 of weight on their back.  
25 Q Is there any one place in the back -- if a

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1 about there would be intermittent pressure on Mr. Lee.  
2 Where did you get that information from?  
3 A That the subject was breathing, talking, that  
4 by virtue of trying to maintain weight on somebody's  
5 back, it's essentially impossible to maintain constant  
6 pressure at one point. I know somebody is putting hands  
7 on, then off; that's intermittent.  
8 Q It's not that anyone said that; it's just  
9 you're assuming that?  
10 MS. OLIVER: Object to the form.  
11 THE WITNESS: In reading the materials.  
12 BY MR. BEDNARZ, SR.:  
13 Q Okay. If you would turn to your report,  
14 Doctor, I'm finally getting to your opinions.  
15 A Only three more hours?  
16 Q Actually, we've covered most of this stuff  
17 anyway.  
18 You talk about under Taser that there's  
19 unwarranted concern of electrocution. But just looking  
20 at the autopsy, is there any way that you can rule out  
21 death by electrocution?  
22 A By autopsy?  
23 Q Yes.  
24 A A lightning strike or a voltage type of thing.  
25 I'm not a medical examiner, but they can certainly find

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1 findings of burns and entry and exit wounds from  
2 electrocution. If there is electrocution, the most  
3 common cause is ventricular fibrillation, which we  
4 talked about earlier did not appear to be the first  
5 rhythm encountered by the police -- or by the  
6 paramedics. And as far as historically, half a million  
7 police officers have been Tasered and none of them have  
8 been electrocuted. It's unlikely this is the very first  
9 case all of a sudden, especially with the underlying  
10 circumstances.

11 Q I guess my question would be in terms of the  
12 autopsy itself, would you expect to find anything  
13 different than what Dr. Levy found if his heart had, in  
14 fact, stopped as a result of the voltage or the amps?

15 A And not being a medical examiner, there may be  
16 other tissue damage you would expect to find, but I  
17 would defer that to the pathology people.

18 Q And then at the very bottom of this report,  
19 "Though muscle activity from the Taser has been shown to  
20 increase lactic acid levels and CPK levels much like a  
21 basic seizure, the activity of a struggle will increase  
22 these levels to a much greater level."

23 What -- what do you base that on, Doctor? In  
24 other words, what literature or body of knowledge do you  
25 base that opinion on; that is, that the exercise or the

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1 know, that cause death. You'll see CPK elevations in  
2 time, you'll see changes in kidney function potentially  
3 over time, but not acute sudden acidosis and death.  
4 These are small muscle groups, focused muscle groups  
5 being contracted and only up to 96 or 98 seconds,  
6 depending on whose report you want to look at, and not  
7 for a half hour at a time.

8 Q In your opinion, Doctor, what is the most  
9 relevant study or studies that have been performed that  
10 would show that the Taser increases lactic acid levels  
11 and CPK levels?

12 A The studies that we described earlier by myself  
13 or my group and Ho and Dawes' group.

14 Q Let me ask you this, Doctor: If -- if you're  
15 saying that a Taser does increase lactic acid levels --  
16 A Yes.

17 Q -- and you have -- and that would be true of  
18 the one five-second application, correct?

19 A That is associated with that, correct.

20 Q Okay. So if you have 19 applications --

21 A May I clarify just to make sure? Lactate  
22 levels will elevate --

23 Q Okay.

24 A -- which can -- which is a marker of stress.

25 Q And help me understand this. If one -- one

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1 activity of the struggle will cause a greater increase  
2 in lactic acid levels other than the Taser?

3 A Just want to make sure I'm reading the same  
4 lines you are. Where are you at now?

5 Q The bottom of page 2. "Though muscle  
6 activity."

7 A Under which heading, I'm sorry? Because my  
8 pages are numbered differently than yours are, printed  
9 out differently than yours are.

10 Q All the way at the bottom under -- it's under  
11 Taser.

12 A Okay. I'm sorry. Thank you.

13 So "The acidosis that can be caused by a Taser  
14 should be likened to a typical seizure in that there  
15 will be some laboratory changes because of the muscle  
16 contractions." That's based on some of the data that's  
17 been done in the -- in human subjects showing an  
18 elevation of CPK over time, and done in seizure patients  
19 in the emergency department showing an elevated CPK over  
20 time.

21 "But not to a level to cause death, given the  
22 numbers and durations as noted in the case of Mr. Lee."  
23 Meaning that we'll see seizures for 30 minutes at a  
24 time, muscle contractions of all muscles in the body for  
25 a long period of time and will not see the changes, you

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1 five-second application increases your lactate acid  
2 level, correct?

3 A In a volunteer who knows the stressor is  
4 coming, correct. It's a marker of stress.

5 Q Are you saying there's a difference in  
6 Patrick Lee?

7 A He didn't necessarily know a Taser was coming.  
8 So he was already under physiologic stress from his  
9 drugs, from his excited state. He wasn't a police  
10 officer sitting there waiting for a dart to come into  
11 his back. That in itself is a potential marker of  
12 stress. So lactate levels can certainly increase just  
13 based on physiologic stress, not necessarily the  
14 physical stress that comes with the Taser.

15 Q Is that the only reason, Doctor, in your  
16 opinion, that the knowledge that you're going to get  
17 Tased -- I mean, is that what causes the increased  
18 level, in your opinion?

19 A Well, we've done exercise on bikes that  
20 increases the lactic acid levels, the lactate levels  
21 eight times, seven to eight times greater than a Taser  
22 application. So by looking at that, exercise is a  
23 bigger stressor than Taser activations.

24 Q And even though it's bigger -- I understand  
25 what you're saying; that is, greater contribution. But



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1 what causes this increase in lactic acid from the Taser?  
2 Is it the muscle contraction or is it just knowing  
3 you're going to be Tased?

4 A Well, it's lactate. So lactic acid is a muscle  
5 contraction over time issue. The lactic acid is a  
6 build-up by-product of muscle -- muscle activity in an  
7 anaerobic state. Lactate is a marker of stress.

8 But as far as what causes the build-up of  
9 lactic acid, it's usually continued application of  
10 muscle activity over time. Meaning that if you go and  
11 exercise now for a minute or two, you'll use up your  
12 glucose stores, your glycogen stores. You probably  
13 won't build up much in the way of lactic acid. You keep  
14 doing it beyond the part of getting tired, you'll start  
15 to build up your lactic acid at that time, and the  
16 continued activity will do it.

17 So a single episode of a Taser application in  
18 somebody at rest is probably not going to crank up  
19 somebody's lactic acid levels.

20 Q Okay. In Patrick Lee's case, did the multiple  
21 applications of Taser increase the level of his -- the  
22 lactate?

23 A The lactate or lactic acid. Lactic acid is the  
24 acid that you're measuring. Lactate is a marker of  
25 stress, physiologic stress, whether it's physical or

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1 infectious.

2 The -- in his case, he was already exerting  
3 himself, already struggling, already running, already in  
4 a state of agitation. The muscle activity from the  
5 Taser compared to muscle activity of being restrained,  
6 you can't separate that out, or the fighting or the  
7 fighting or the aerobic activity there. So a few  
8 five-second -- a few, two, a number of applications may  
9 have had some impact on lactate stress levels. Whether  
10 his lactate -- lactic acid levels were going to change  
11 is hard to define, because typically the exertional  
12 component has more of an impact on those levels than  
13 muscle contraction of a couple of muscle groups for a  
14 short period of time.

15 Q As I understand it, you're saying the greater  
16 contribution was from the struggle or the exercise?

17 A Correct.

18 Q But some of it, no matter how small, you still  
19 had some of it from the Taser itself?

20 A Again, I don't know how you can separate that  
21 out.

22 Q And without trying to separate it, would you  
23 agree that there was some contribution to his lactic  
24 acid level as a result of the multiple applications of  
25 the Taser?

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1 A Again, I can't separate that out. He may have  
2 been maxed out from his lactic acid production strictly  
3 from his muscle contractions from the fighting and the  
4 struggling and the trying to get away that it wasn't  
5 going to increase whether it was more officers grabbing  
6 his arms, whether it was more officers using Tasers,  
7 whether it was more officers using baton strikes. He  
8 was more than likely already cranking his muscles to the  
9 point where they were using the -- they were using all  
10 their stores to try to fight and flight, and the lactic  
11 acid was already there.

12 So I can't say the Taser took it up to -- you  
13 know, the dial from 10 to 11. It was -- he was already  
14 maximally exerting himself and using his muscles  
15 already.

16 Q Okay. Assume that he wasn't maxed out. And as  
17 I understand your opinion from earlier on, he was maxed  
18 out somewhere in the middle of those Taser applications,  
19 correct?

20 A Somewhere he was revving up, ramping up. We  
21 talked about that, yes.

22 Q Well, before he hit the level of being maxed  
23 out, would you agree that those early Taser applications  
24 contributed to his rise in -- I want to use your  
25 words --

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1 A Lactic acids.

2 Q -- lactic acids?

3 A Again, I believe his lactic acid was already  
4 going up significantly because of his fighting. I can't  
5 separate out whether a couple of, you know, hundredths  
6 of a nanogram per deciliter would actually be cause of  
7 his Taser or not. Physiologically it's not going to  
8 have an impact more than his fighting and struggling.

9 Q And all I'm trying to get at, would you agree  
10 it's more probable than not that before he was maxed  
11 out, when he was Tased, the Taser alone somehow affected  
12 his increase in lactic acid?

13 A And I'm saying no. If he hadn't been Tasered,  
14 he still would have been struggling during that  
15 five-second interval with his arms and legs moving  
16 versus just having a part of his body locked up. Taser,  
17 theoretically, if you want to go theory like you're  
18 saying, could have been protective. He may have  
19 actually been stopping other muscle groups from  
20 contracting as much during those intervals as he was  
21 fighting if the Taser wasn't being used. Meaning he  
22 could be fighting with all four arms and legs and  
23 struggling and moving those large muscle groups, whereas  
24 the Taser is going off, he only may be having an arm and  
25 a leg being involved, depending on where the probes were

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1 located.  
2 So just by stopping the use of the Taser, he'd  
3 still be struggling. He'd still be creating lactic  
4 acid.  
5 Q Okay. You still stand by the statement you  
6 made here, though, "Though muscle activity has been  
7 shown to increase lactic acid levels and CPK levels much  
8 like the basic seizure, the activity of a struggle will  
9 increase these levels to a much greater level"?  
10 A In somebody who hasn't already -- isn't already  
11 doing it on their own by struggling and fighting,  
12 correct.  
13 Q Okay. So that doesn't apply to Patrick Lee  
14 then?  
15 A Which part?  
16 Q That sentence.  
17 A If he was -- if he was just sitting there, if  
18 he was a normal subject, then yeah, it would increase  
19 it. He was not a normal subject. He was already  
20 increasing his lactic acid levels on his own.  
21 Q And if I take that one step further then, the  
22 Taser will increase lactic acid levels of an individual  
23 that doesn't have excited delirium, but it will not do  
24 it to somebody that does have excited delirium?  
25 A I got distracted.

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1 Taser?  
2 MS. OLIVER: Object to the form.  
3 THE WITNESS: And I think I've answered that.  
4 I said that during the period of time, that even if you  
5 take the extreme of 96 seconds of Taser application,  
6 which you know isn't the case, and you put those on him,  
7 the time that he is -- if you had taken those away, he  
8 wasn't going to be sitting there still like a church  
9 mouse. He was still struggling. There was going to be  
10 still muscle activity going on, building up his lactic  
11 acid. So the Taser is not -- it didn't change his  
12 natural progression from his underlying excited state.  
13 BY MR. BEDNARZ, SR.:  
14 Q And forgive me for asking this question,  
15 because I know I've asked it a couple times, but I still  
16 don't understand it and I need to understand your  
17 opinion.  
18 If I wanted to learn about what you've been  
19 talking about how a person is revved up and then they  
20 maxed out and then the Taser doesn't matter after  
21 they're maxed out; is that what you're saying  
22 essentially?  
23 A Once they're revved up and maxed out, sure,  
24 exactly.  
25 Q Okay. Where can I find some literature that

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1 The Taser will increase lactate levels in  
2 somebody, and some muscle activity probably would see  
3 some -- it potentially could see lactic acid levels over  
4 time. They describe, a single set of muscle exercise  
5 there is unlikely to put you into aerobic metabolism,  
6 which is how you get your lactic acid. If you -- if I  
7 Taser you one time, probably wouldn't see any changes  
8 other than a little bit of heart rate increase and maybe  
9 some CK levels down the road. And lactate would go up,  
10 a marker of stress. Lactic acid, you have to have  
11 anaerobic activity, and so you, in all likelihood,  
12 wouldn't see it from a single activation.  
13 Q And then you liken it to that of a typical  
14 seizure.  
15 A The muscle activity part, yes.  
16 Q "The acidosis that can be caused by a Taser  
17 should be likened to a typical seizure." That's your  
18 words.  
19 A In the sense that, yes, that somebody is not  
20 going to get an acidosis that kills them from a typical  
21 seizure.  
22 Q And the only thing I'm trying to point out is  
23 however minuscule, Doctor, would you agree that there  
24 was probably some increase in lactic acid or lactic  
25 acidosis as a result of the multiple applications of

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1 supports that or would explain to me what "maxed out"  
2 is? What does that mean from a medical viewpoint?  
3 A As far as -- I think we discussed this as well.  
4 Getting your heart rate up to a certain level, getting  
5 your blood pressure up to a certain level, potentially  
6 hyperthermia. As far as, you know, literature on it --  
7 Q Yes.  
8 A -- you have the whole file of Wetli's,  
9 DiMaio's, Ho's, mine. There's not a study on human  
10 subjects who have been put onto cocaine, who have been  
11 then measured at certain levels, and then either Tasered  
12 or pepper sprayed. So you have to look at the body of  
13 literature, look at the case reports, look at the case  
14 series, pull them all together. So that's not something  
15 you just do with one single article. It's something you  
16 do over a career period and you start to learn these  
17 things.  
18 Q But is there any explanation in that literature  
19 about when a person is maxed out and what maxed out  
20 consists of?  
21 A I defined this with you as well. Nobody is  
22 doing blood draws during these times. You can't get in  
23 there to, you know, do needle sticks on these people  
24 that are being foul with police. So to try to find when  
25 or how or what is the maxed-out period is impossible.

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1 You can't go and even check somebody's pulse when they  
2 have three police officers trying to restrain them and  
3 using ASP strikes or OC sprays.  
4 So this is all based on data from before and  
5 after when the paramedics get there or things that  
6 happen in the hospital of similar nature. But to try to  
7 do a study that goes for each one, you can take clinical  
8 data. So I've seen hundreds of people high on various  
9 drugs. I've seen how they act physiologically. I can  
10 give you ranges of heart rates. I can give you how they  
11 respond to sedation, how they respond to restraint, how  
12 they will fight, but I can't give you a study in which  
13 we've given people drugs and then tried to measure the  
14 effects of certain maneuvers on them.  
15 Q I've read both of these books. Never read  
16 anything about maxed out. Is there another medical term  
17 for maxed out? And what I'm getting at is, I understand  
18 your opinion is saying there's some point in time  
19 Patrick Lee's physiological state was maximized. It  
20 was -- everything was just at the max, and that nothing  
21 that happened to him after that made him any worse.  
22 A He was already at a point of his heart rate was  
23 as high as it's going to get. You eventually get to a  
24 point where you can't get your heart rate higher. Your  
25 blood pressure doesn't go higher. Your muscle fighting

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1 just aren't going to get any worse no matter what you do  
2 to a person. That's the point I'm trying to understand  
3 and I'm having difficulty with.  
4 A Right.  
5 Q Now, is this a Dr. Vilke's theory, or is this a  
6 medical substantiated form of science, medical science?  
7 MS. OLIVER: Object to the form.  
8 MR. BEDNARZ, SR.: Terrible question. I'm glad  
9 you objected. I was going to object myself.  
10 Q I'm not trying to beat a dead horse. I'm just  
11 having trouble understanding this concept.  
12 A I believe if you ask a toxicologist or anybody  
13 else who deals with patients who are intoxicated with  
14 drugs or have even untreated psychiatric disorders that  
15 have sort of gotten, you know, hallucinations and sort  
16 of out of control, if you ask them, will a person get to  
17 a certain state physiologically where they have peaked  
18 out with regards to their heart rates, their autonomic  
19 function, their flight or fight type symptoms, if you  
20 see cocaine-induced or methamphetamine-induced, people  
21 will tell you, yes, there's a point where people can't  
22 go any higher. You give them more drugs and they won't  
23 go higher. You stimulate them more, they won't go  
24 higher. They are -- I use the term "maxed out."  
25 Somebody may say they are at peak, they are at high risk

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1 contractility doesn't go any faster or more  
2 aggressively. That's what I'm defining as maxed out.  
3 Q Is there anything in the medical literature  
4 outside of "Excited Delirium" that discusses such a  
5 physiological phenomenon?  
6 A I didn't really look, you know, for specific  
7 references. Obviously you can look up toxicology  
8 references with regards to any of the intoxications and  
9 the ranges that people can get into, which obviously the  
10 upper range would be the maximum range. But as far as  
11 physiologic effects, they're in all the medical books as  
12 far as what you can see with drug intoxications or in  
13 some of the other texts as far as excited delirium.  
14 Q Do you know if DiMaio or Wetli, either one,  
15 discusses this maxed-out position?  
16 A I think you earlier actually quoted to me  
17 Wetli's commentary on, what was it, exercise -- you  
18 quoted that, that he had referred to. An over --  
19 Q An exaggeration of exercise physiology.  
20 A Right. So it's -- as far as that goes, that is  
21 in the realm of your normal physiology is now  
22 exaggerated. It's up there.  
23 Q But the point I'm trying to get at is, what is  
24 it that says that at some point in time your heart rate  
25 is as fast as it's going to go, your -- I mean, things

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1 for sudden death, they are at a physiologic high point.  
2 I think everybody recognizes that can happen because  
3 that's the way the human body works. And eventually  
4 things will happen. Either they'll shut down, or like  
5 if it's just a cocaine induction and you don't die from  
6 it because it's not excited delirium or you're not  
7 predestined to go that direction, eventually the meds --  
8 the drug will run its course and things will start to  
9 calm down. But there is a point where you do have --  
10 you hit a peak.  
11 Q Okay. I've read and been told that there's  
12 such a thing -- it's not necessarily Jim Fixx, but it's  
13 other marathon runners or people in basic training or  
14 football games, without any influence of drugs or  
15 underlying cardiac disease, that can exert themselves to  
16 the point where the metabolic acidosis is increased,  
17 increased, and they eventually die from it. Is that  
18 possible?  
19 A I have read the military literature as well.  
20 Typically those -- there is usually an underlying  
21 medical condition that hadn't been previously described,  
22 whether it's a cardiomyopathy or a sickle cell trait  
23 that hadn't been previously recognized. I have not  
24 really heard of any that were from exhaustive components  
25 of things without anything else underneath it, so I have



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1 not heard that myself.  
2 Q And what I was driving at, could a person that  
3 was not under the influence of drugs get maxed out as  
4 far as metabolic acidosis is concerned?

5 A I'm not aware of that. The body usually gives  
6 you feedback to stop whatever you're doing so you don't  
7 go beyond a certain physiologic parameter.

8 Q I'm reading your opinions.

9 Do you feel qualified, Doctor -- and I don't  
10 mean this disrespectful, but given the fact that we have  
11 a medical examiner, Dr. Levy, and numerous pathologists  
12 on both sides talking about the cause of death, as an  
13 emergency room physician, do you feel qualified to give  
14 an opinion as to the cause of death?

15 A Yes.

16 Q Okay. And tell me what is it about your  
17 training, education and experience outside of being an  
18 active emergency room doctor -- and again, I'm not  
19 trying to minimize your qualification -- what is it that  
20 allows you to express an opinion on the cause of death?

21 A The fact that I work with these types of  
22 patients on a regular basis. And since drug  
23 intoxication, psychiatric, people who have been exposed  
24 to pepper spray, drug cardiac arrest -- drug-induced  
25 cardiac arrest, excited delirium, I have followed the --

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1 Q Did you make any -- I didn't see where you made  
2 any notes on your statement here about Dr. Levy's  
3 deposition.

4 A Probably not.

5 Q If there was something boldly apparent that you  
6 would have disagreed with, would you have made a note of  
7 it?

8 A Again, probably not. It's not part of what I  
9 form my opinion based on. I review the other people's  
10 commentary, but I'm not rebutting or putting commentary  
11 in there, so I usually don't make specific notes.

12 Q In terms of hyperthermia, when a person has  
13 hyperthermia from excited delirium, do you have an  
14 opinion as to whether or not the elevated temperature  
15 damages the internal organs?

16 A Typically somebody who has hyperthermia and  
17 excited delirium, hyperthermia is something we see on a  
18 not infrequent basis here in San Diego from  
19 environmental conditions or other drug-induced states.  
20 It doesn't necessarily damage internal organs, although  
21 it depends on what context you're looking at it. So if  
22 there's hyperthermia from excited delirium, you know,  
23 it's the other issues that tend to be the problem, not  
24 just specifically the hyperthermia.

25 Q Let me ask you if you agree with Dr. Levy on

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1 in a sense, I take care of patients from the process of  
2 them being alive to dying. Medical examiners obviously  
3 evaluate them after death. I certainly don't give  
4 information on pathology or the autopsy itself, but with  
5 the qualified information I've reviewed from the  
6 pathologist, meaning a normal unremarkable examination,  
7 if we take that as being appropriate, I am very  
8 qualified to evaluate the symptoms and signs and  
9 evaluations of what occurred up and to the time of  
10 death, which is where you come up with these types of  
11 causes of death. I write for -- I write myself, when a  
12 person dies, causes of death. So we are, as emergency  
13 physicians, able to sign off a death certificate. So I  
14 have and will continue to determine causes of death in  
15 patients.

16 Q You refer to myocardial hypertrophy of  
17 Mr. Lee's heart. Do you have an opinion to a reasonable  
18 degree of medical certainty as to what Mr. Lee's life  
19 expectancy would have been, absent any kind of LSD use  
20 or drug use or excited delirium, based on his heart  
21 condition?

22 A No.

23 Q Did you read -- I think you did. You read  
24 Dr. Levy's deposition?

25 A Yes.

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1 page 33 of his deposition. "The stress to the muscles  
2 could either be voluntary or involuntary. A Taser does  
3 cause muscle contractions, and if they're causing the  
4 muscles to contract, they will obviously increase the  
5 demand by the muscle for oxygen." Do you agree with  
6 that?

7 A Muscle contraction obviously utilizes oxygen.

8 Q "And therefore, any lack of oxygen will cause  
9 the person to shift over to produce lactic acid."

10 A If they aren't already doing that, they've  
11 already -- they may have already been shifted.

12 Q Okay. Would you agree that the contractions  
13 caused by the Taser increase the demand for that muscle  
14 for oxygen?

15 A Again, any contractions of a muscle, whether  
16 it's struggle versus a Taser contraction, is a  
17 contraction of the muscle. So there would be some need  
18 for metabolic products.

19 Q And this goes back to your opinion. See,  
20 again, I'm just trying to understand your opinion. So  
21 we have a muscle contraction from a Taser, increases  
22 demand for oxygen, you're not getting enough oxygen  
23 which increases your lactic acid. How can you say that  
24 the Taser did not affect the level of his lactic acid?

25 A Why are we not getting enough oxygen? I don't



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1 believe I ever said there was any hypoxia.  
2 Q Okay. What effect did the level of his  
3 lactic -- lactic acidosis have on his cardiac arrest?  
4 A What effect did the lactic acidosis have on it?  
5 Q Yes, or metabolic acidosis.  
6 A The whole phenomenon of the excited delirium,  
7 the adrenaline raising, the auditory -- the  
8 auto-regulatory decrease, potentially -- again, not  
9 defines acidosis -- can increase the cardiac  
10 irritability of the heart and cause a sudden cardiac  
11 arrest.  
12 Q Okay. Now, it's my understanding that  
13 metabolic acidosis was a contributing factor to the  
14 cardiac arrest. Am I wrong?  
15 A It may be.  
16 Q Okay.  
17 A It may be. I described it as the drugs  
18 themselves, the increased metabolic state, the  
19 tachycardia, the adrenergic stimulation, the blood  
20 pressure elevation that you get with the drug use in the  
21 excited state are cardiac irritabilities, especially  
22 with somebody who's got a cardiomyopathy that's already  
23 prone to dysrhythmias.  
24 Q Well, if he had a high level of metabolic  
25 acidosis, wouldn't that in and of itself prove that he

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1 any reason to disagree with that?  
2 A I would defer to the pathologists.  
3 Q You agree with Dr. Levy when he said that in  
4 and of themselves, the drugs that he had on board were  
5 not lethal and they would not have killed him?  
6 A In and of themselves, the drugs that he had on  
7 board. People die from LSD, so I have to disagree.  
8 Q You say people die of LSD. Does that -- is  
9 that rare?  
10 A It's not as common as other med -- other drugs,  
11 but it has happened. So in and of themselves, I  
12 disagree that that could happen.  
13 Q Okay. So you disagree with Dr. Levy when you  
14 say in and of themselves, these drugs would not have  
15 killed him?  
16 A Correct.  
17 Q Okay. Page 46, "It is important for a person  
18 under those conditions" -- he's talking about Mr. Lee --  
19 "to maintain proper breathing because you're producing  
20 lactic acid and you're not getting enough oxygen where  
21 you need it to your muscle cells, so you want to be  
22 breathing as well as possible." Do you agree with that?  
23 A I think as I commented earlier, breathing is  
24 always good.  
25 Q Not only good, I mean, it's necessary, isn't

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1 had a lack of oxygen?  
2 A Metabolic acidosis. So if I sent you out to  
3 exercise, and you go and you start getting muscle cramps  
4 and have you keep exercising, you will develop a lactic  
5 acidosis. It doesn't mean that you have a lack of  
6 oxygen. You're breathing just fine. It means that  
7 you're running out of your glycogen stores, your glucose  
8 stores, and you're shifting over to an anaerobic way of  
9 metabolizing. It's not because you're hypoxic.  
10 Q Do you agree that the findings -- with Dr. Levy  
11 that the findings on autopsy could be consistent with  
12 some type of asphyxia?  
13 A That the findings on autopsy could be  
14 consistent with asphyxia. There are no findings on  
15 autopsy that support asphyxia, although theoretically  
16 there can be a lack of findings for asphyxia. So  
17 meaning there's certainly nothing on the autopsy that  
18 would be consistent with asphyxia, no petechiae, no  
19 airway edema or changes of that nature. However, as I  
20 understand it, theoretically you can have a normal  
21 autopsy findings with asphyxia, but I'd again defer to  
22 the medical examiner community for that part.  
23 Q And that's what I'm getting at. If Dr. Levy  
24 expressed the opinion that his findings could also be  
25 consistent with some type of asphyxia, would you have

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1 it?  
2 A Well, if you stop breathing or you impair your  
3 breathing, it is certainly not going to have a positive  
4 impact on you.  
5 Q Impaired breathing is not a good thing if  
6 you're suffering with lactic acidosis?  
7 A Correct. You don't want to build up your CO2  
8 levels.  
9 MS. OLIVER: I think you're rattling your  
10 papers again, Mr. Bednarz.  
11 BY MR. BEDNARZ, SR.:  
12 Q You know that Dr. Lee -- I mean Levy has not  
13 ruled out Taser, pepper spray or physical force as a  
14 contributing factor in Mr. Lee's death?  
15 A Do I know that?  
16 Q Yeah.  
17 A I probably have read that, but I -- I'll take  
18 your word for it.  
19 Q And I guess my question would be, if the  
20 medical examiner can't rule them out, how can you?  
21 MR. BROWN: Object to the form of the question.  
22 MR. HARRIS: Object to the form of the  
23 question.  
24 MR. BEDNARZ, SR.: Boy, that must have been a  
25 good one if I got three objections.

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1 THE WITNESS: How can I rule them out as causes  
2 of death? I look at them as independent contributing  
3 factors and the data behind them and the presentation of  
4 his case. And so pepper spray is an irritant; in and of  
5 itself will not kill somebody. Taser we talked about.  
6 Baton strikes we talked about. Position we have talked  
7 about. The common thread for deaths of this manner is  
8 excited delirium.

9 BY MR. BEDNARZ, SR.:

10 Q Do you intend to express an opinion as to  
11 whether or not Patrick Lee was a chronic drug abuser?

12 A I do not plan to offer an opinion at this time.

13 Q Okay. I don't want you to change up on me now.

14 A I don't have -- I don't have any opinion at  
15 this time on that and don't plan to.

16 MR. BEDNARZ, SR.: I thought we were going to  
17 finish and get the police officer done. I really  
18 thought it was going to be a lot quicker than this, but  
19 I'm getting close to being finished.

20 Q Have you ever testified for a plaintiff -- I  
21 know the answer to this. You've testified once for  
22 plaintiff against a police department, correct?

23 A Correct.

24 Q Is that the only one?

25 A Yes.

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1 Q Okay. And I got that out of this deposition  
2 that I talked about earlier.

3 And what police department was that you  
4 testified against?

5 A New -- in Connecticut.

6 Q That's okay, I'm sure it's in here somewhere.

7 How many times have you testified live at  
8 trial?

9 A Not that many. I think you have my whole list  
10 of them. I don't think there are -- other than the one  
11 that you have referred to, that was the only one that I  
12 think predated the four years.

13 Q Okay. Well, I know the list goes back four  
14 years, but have you ever testified before that?

15 A I think that one case that you're referring to  
16 in Connecticut, I did testify live at trial for that. I  
17 don't believe any other cases at trial beyond that one.

18 Q Have you ever had any of your opinions excluded  
19 by a judge as being scientifically unreliable?

20 A No.

21 Q Do you have an opinion as to what percentage of  
22 people would not have hyperthermia or at least increased  
23 body temperature that was suffering from excited  
24 delirium?

25 A No.

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1 Q It's pretty uncommon, or is it?

2 A Many people will have an elevated temperature.  
3 I don't have a percentage to offer you.

4 Q Doctor, if you've already answered this  
5 question, just tell me so. But I want to be sure I  
6 understand what your opinion is as to how LSD in and of  
7 itself caused Mr. Lee's -- or if the LSD caused any  
8 change in Mr. Lee's cardiovascular system.

9 A Yeah, I think we touched on this earlier. The  
10 LSD itself is typically a hallucinogen. It can  
11 certainly cause physiologic changes in the sense that it  
12 creates delusions, hallucinations, it can create  
13 paranoid behavior or not. Those then obviously can  
14 cause sympathomimetic type changes: Increased heart  
15 rate, increased blood pressure, can cause anxiety,  
16 sweating, and we talked about, can cause excited  
17 delirium which is a manifestation of those.

18 Q And I remember talking about it now. And does  
19 that all mean when it's a bad trip as opposed to a good  
20 trip?

21 A Well, with the good trips people still have  
22 some changes depending on how things were going. We'll  
23 see sometimes elevation in heart rate, sometimes not.  
24 So it varies.

25 Q Doctor, we asked for the underlying data of

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1 this testing that you have done, and I've been told that  
2 you do not have possession of it any longer?

3 A I never had possession of it.

4 Q Okay. What is the process, who has possession  
5 of that underlying data?

6 A What we did is we got funded to do the study.  
7 We got grant funded, and we worked with one of our other  
8 colleges, San Diego State University, so we collaborated  
9 with their exercise physiology lab.

10 Typically what we do is we get a graduate  
11 student to work with us, and they are responsible for a  
12 lot of the maintenance of the records. We get the data  
13 in forms of databases and we have our analyst go  
14 through. So I don't have the raw data or the paper that  
15 we jotted the notes down during the time of enrollment.

16 Q Okay. Is there -- you've been involved in  
17 numerous studies.

18 A Correct.

19 Q Is there -- is all of this underlying data  
20 stored in one place or multiple places?

21 A Depends on the studies. When I was more of a  
22 junior person, I was the grunt person, took care of all  
23 the data myself. But as we've gotten further along in  
24 my academic career, we take advantage of the free labor  
25 of graduate students. And so typically they'll maintain

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1 it, or they maintain it at one of their other  
2 professors' sites on campus. But I don't keep those  
3 records in my files.  
4 Q Okay. Are they available?  
5 A Potentially. And I say that in the sense that  
6 I'm not sure what they have done with them since we have  
7 published papers. When we publish, they typically will  
8 not -- you know, they get their -- they get their Ph.D.  
9 thesis done, we get the paper published, there's no real  
10 reason to keep the data, and so sometimes that is  
11 eliminated. So I don't know where it is or if it is  
12 still in existence.  
13 Q This funding by the National Institute of  
14 Justice, how many studies have they funded?  
15 A We've been -- we received grants from them for  
16 us, you're referring to?  
17 Q Uh-huh.  
18 A We've received grants from them twice.  
19 Q Now, what is the underlying purpose of that?  
20 Why would this particular governmental agency give you  
21 money to do this testing?  
22 A For the Taser specifically or in general?  
23 Q In general.  
24 A In general, there's sometimes questions about  
25 whatever they wanted to test. In this case or in our

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1 THE WITNESS: They have approved the funding  
2 for the studies and the methods that were involved in  
3 doing the studies, but they have not put the seal of  
4 approval on the -- they have not told us that they agree  
5 with the findings. They just have funded it and agreed  
6 with our methodology.  
7 BY MR. BEDNARZ, SR.:  
8 Q As a matter of fact, there's a disclaimer in  
9 here early on that says, "The findings and conclusions  
10 of the research reported" -- and this is a different  
11 study, but I assume you would have the same thing in  
12 your study?  
13 A Very possible.  
14 Q -- "do not reflect the official position and  
15 policies of the respective organizations or the U.S.  
16 Department of Justice."  
17 A Would not surprise me.  
18 Q Okay. And the reason I say that, I've heard  
19 some reference that the government has endorsed your  
20 study in something.  
21 MS. OLIVER: And the reason I objected is I  
22 wanted to make sure that you weren't getting into, in  
23 not government approved, that he was violating any kind  
24 of methodology problems.  
25 MR. BEDNARZ, SR.: Oh, no, no.

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1 two cases, one was pepper spray and one was the Taser.  
2 And so they wanted to get more data available on the  
3 human physiologic effects for their -- for reasons  
4 probably because of press and media coverage.  
5 Q Okay. And because this is a governmental  
6 agency, this is U.S. taxpayer dollars?  
7 A I assume that's where they get their dollar --  
8 their dollars from.  
9 Q Now, just because they pay for the study, does  
10 that mean they have endorsed the study and the  
11 government has sided with you in regard to your  
12 findings?  
13 A Typically they remain separate from us. We  
14 propose a methodology of evaluating whatever they're  
15 looking to evaluate. They review it. They choose  
16 whether or not to fund it. And once we -- it is funded,  
17 we -- really they have no insight or no control over the  
18 data, the results or what is published. They do want us  
19 to do a report to them, which we do, and that's included  
20 in the C.V. But as far as they don't review it, they  
21 don't edit it, they don't modify it. It's our own work.  
22 Q Okay. It would be fair to say then the  
23 government has not approved these studies?  
24 A They have --  
25 MS. OLIVER: Object to the form.

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1 Q I just -- I just don't want you showing up at  
2 trial saying, and the government has approved this  
3 study. The government has given me the good seal of  
4 approval, Good Housekeeping seal, something like that.  
5 A No. The government reviewed the methodology  
6 and funded the study.  
7 Q Have you ever been involved with any other  
8 electronic control devices other than the Taser?  
9 A Involved in what degree?  
10 Q In any degree. Do you know of any other cases  
11 you've been involved with or studies that involve any  
12 kind of electronic control device other than the one by  
13 Taser International?  
14 A At our jail we have one of the ICE shields, so  
15 I've seen those utilized. That's probably the extent of  
16 my -- and seeing stun guns at the swat meet. Stun guns  
17 at the swap meet.  
18 Q And I know you've reviewed a lot of the  
19 literature. Have you reviewed the literature concerning  
20 the Sticky Shocker?  
21 A Not really, no. I've heard of it, but I have  
22 not reviewed literature on it.  
23 Q There was a Penn State study on this particular  
24 device. Have you ever seen it?  
25 A Have not seen that study.

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1 Q Are you familiar with the Jauchen studies on  
2 pigs?  
3 A Jauchen?  
4 Q What is the right way to pronounce that?  
5 A Apparently I've been doing it wrong, so I'm not  
6 sure. It's like J-a-u-c-h-e-n.  
7 Q Well, I've been pronouncing it "Jocum," I  
8 think. "Yokum"? I'm not sure how to pronounce it. Are  
9 you familiar with that study?  
10 A I'm familiar with a number of the pig studies.  
11 Q There's several others also.  
12 A Yes.  
13 Q What relevance do the pig studies have with  
14 regard to the effect of the Taser on a human being  
15 concerning lactic acidosis, in your opinion?  
16 A In my opinion, I don't put much credence into  
17 the pig studies for many reasons, so I don't use them as  
18 part of my opinion-making in humans.  
19 Q Okay. And tell me why not.  
20 A The methodology for pig studies varies. They  
21 usually are sedated, they're usually on ventilators. So  
22 they're not free to breathe necessarily the way a human  
23 would breathe during a painful stimuli or a  
24 muscular-contracting stimuli. Pigs' physiology is a  
25 little bit different than humans, and the heart is

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1 different changes that can be noted that way. Again, I  
2 don't purport to be myself a pig expert, but I have done  
3 enough reading to understand that pigs' physiology and  
4 the methodology set up there is difficult to interpret  
5 into the human component.  
6 Q And you know Taser has -- had some studies done  
7 on pigs by McDaniel and Stratbucker?  
8 A Correct.  
9 Q I take it you feel the same way about those as  
10 the ones by Jauchen and the other ones?  
11 A I put them all in sort of the same category of  
12 interesting, but it's difficult to interpret to a human.  
13 Q Doctor, have you or Dr. Chan or Dr. Neuman  
14 conducted any studies concerning the Taser that you have  
15 not had published?  
16 A All the data that we have done -- all the  
17 studies we have done have been published in one form or  
18 another.  
19 Q Okay.  
20 A I shouldn't say that. The one I referred to in  
21 the American Journal of Forensic Sciences is accepted  
22 but not published. But it was actually presented in an  
23 abstract form as well, so it was published.  
24 Q And you agreed to provide us a copy of that?  
25 A It is all in my C.V. If I'm reminded to, I can

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1 considered to be often more irritable than in humans.  
2 And so --  
3 Q You remember we talked earlier about the fact  
4 that you know you're going to get Tased increases your  
5 level of lactic acid?  
6 A Lactate levels.  
7 Q Lactate.  
8 A I'd say no, it's the heart rate goes up and  
9 we've seen some lactate changes in -- with Tasers.  
10 Q Okay. We don't have that problem with pigs  
11 because they don't know it's coming, right?  
12 A The assumption would be they were sedated and  
13 ventilated, they probably didn't see it coming at them.  
14 Q So my question would be, how is a human any  
15 different in terms of having a physiological response to  
16 the Taser than a pig?  
17 A A physiologic response. Well --  
18 Q As it pertains to lactic acid, acidosis.  
19 A So if I put you on a ventilator and then  
20 sedated you, you would be different than a -- Mr. Lee  
21 out in the field who is not sedated, not ventilated, not  
22 having his airway supported. And it's a different type  
23 of heart. Again, if you're looking at irritation and  
24 irritability of the heart, pigs have been noted to be  
25 more prone to dysrhythmias. So there's a lot of

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1 certainly get copies of the abstracts.  
2 MS. OLIVER: The one that he submitted to  
3 DiMaio's journal but hasn't been published yet, is that  
4 what you want a copy of?  
5 MR. BEDNARZ, SR.: Yes.  
6 MS. OLIVER: I'll remind him of that.  
7 BY MR. BEDNARZ, SR.:  
8 Q Now, this is back in 2005, but you were asked  
9 about other studies. And this refers to Appendix D  
10 which is not helpful. But you stated, "We have recently  
11 completed some research using heavier weights on people,  
12 but it's not yet published. The data is being evaluated  
13 and the manuscript is being written, but it's not  
14 published yet."  
15 Question: "Did you do that with Chan and  
16 Neuman and everybody?"  
17 "That's correct."  
18 Is that the study that you're talking about?  
19 A That the Michaeliewicz study that I referred to  
20 earlier. The Michaeliewicz.  
21 Q Okay. And that has since been published?  
22 A Yes. I gave you the number on that.  
23 MS. OLIVER: 106.  
24 THE WITNESS: 106.  
25 MR. BEDNARZ, SR.: Why don't we take five



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1 minutes. What I want to do, Doctor, is condense this  
2 down. If I don't, I'm going to keep rambling for  
3 another hour and I don't want to do that. I think if we  
4 take a five-minute break, I can condense it down and be  
5 through in 10 or 15 minutes.  
6 THE VIDEOGRAPHER: Going off the record, the  
7 time is 4:25 p.m.  
8 (Recess.)  
9 THE VIDEOGRAPHER: We are back on the record.  
10 The time is 4:35 p.m.  
11 BY MR. BEDNARZ, SR.:  
12 Q Doctor, we talked about other cases, and I  
13 think you told me since April 28th you have only given  
14 one deposition and that was in Lewis versus Riverside?  
15 A May have been Mitchell. I'm trying to  
16 remember. It's a Riverside case. I think I said Lewis  
17 versus Riverside; it may be Mitchell versus Riverside.  
18 Q Okay. But that's in Los Angeles?  
19 A The deposition was in Los Angeles, yes.  
20 Q Okay. Where is the case filed?  
21 A Riverside County.  
22 Q Which is?  
23 A Near Los Angeles.  
24 Q Okay. And it would be against -- the lawsuit  
25 would be against Riverside County?

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1 A Med mal.  
2 Q The one before that, January 25th?  
3 A That's also med mal.  
4 Q Okay. September 14th?  
5 A That's a case of -- I'm trying to remember  
6 specifics. It's an in-custody death in Maryland, pepper  
7 spray and restraint, I believe.  
8 Q Do you know if it's set for trial?  
9 A It is still active but is not set that I'm  
10 aware of.  
11 Q Then the one before that?  
12 A That is med mal.  
13 Q Is Rich versus Savannah still ongoing?  
14 A That's the one you have there. I'm trying to  
15 remember. For some reason, strange enough, I just ran  
16 an update on my files this past week, and I don't recall  
17 that being on my active list anymore.  
18 Q The next one, January 7th?  
19 A That's an OC case that has been dismissed.  
20 Q I'm sorry, it has been what?  
21 A OC case that's been dismissed.  
22 Q And December 17th?  
23 A That's also med mal.  
24 Q Med mal. November 4th?  
25 A That's a neck-hold case.

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1 A Correct.  
2 Q And that was on positional asphyxia?  
3 A Correct.  
4 Q In regard to this deposition of Murphy as  
5 personal representative of the estate of Crumpton versus  
6 Laura Kay, et cetera, et cetera, Santa Fe Sheriff, what  
7 is that case all about?  
8 A That was an in-custody death.  
9 MR. BEDNARZ, SR.: And Counsel, if you get your  
10 list.  
11 Q In-custody death?  
12 A Did he die? It's medical care within a jail  
13 facility, as far as that goes. It does not have to do  
14 with asphyxia or Taser.  
15 Q Okay. Neither one?  
16 A Correct.  
17 Q And the one before that, January 8th, what  
18 is -- what is the issue in that case?  
19 A January 8th.  
20 MS. OLIVER: What year?  
21 THE WITNESS: Okay. Charles Reynolds. That's  
22 also a med mal case.  
23 BY MR. BEDNARZ, SR.:  
24 Q Okay. The next one I have before that was  
25 July 10th, Baker versus -- is that med mal?

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1 Q Do you know of any testing that is ongoing  
2 right now by either you, Dr. Chan or Dr. Neuman in  
3 regard to Taser or any kind of restraint?  
4 A Strange enough, we have a study scheduled for  
5 Saturday in restraint chairs to be initiated. But  
6 beyond that, no other studies that are actively ongoing.  
7 Q Okay. Tell me what -- restraint chairs?  
8 A Restraint chair. The Pro-strait chairs that  
9 they use at -- Pro-strait chairs that are used at law  
10 facilities where people are cuffed to the arms and  
11 cuffed to the legs and they have to be bent over to be  
12 positioned there. We're going to be measuring  
13 ventilatory effects of the Pro-strait chairs on the  
14 subjects.  
15 Q And what is the purpose of that testing? Is  
16 that for litigation?  
17 A It is not a specific case, but there have been  
18 cases litigated in the past utilizing the cause of death  
19 as being position asphyxia in a Pro-strait chair.  
20 Q Did you discuss this case with any other  
21 physicians?  
22 A No, I did not.  
23 Q My final checklist now. You know I'm getting  
24 close when I get to my final checklist.  
25 A I saw a lot of files behind that, I was

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1 starting to get nervous.  
2 Q Doctor, the only correspondence or  
3 communication documentation that you've brought with you  
4 is one e-mail that Mr. Brown sent to you. Has there  
5 been correspondence, written communication between both  
6 of them?  
7 A No.  
8 Q So everything has been by telephone?  
9 A Correct.  
10 Q Or in person?  
11 A Correct.  
12 I shouldn't say that. I may have -- correct. I  
13 may have sent my report electronically, so there's  
14 probably an outgoing e-mail from me to both of them. I  
15 apologize.  
16 Q Now, would your report be the same as what I  
17 have here?  
18 A Correct, yes.  
19 Q I notice you had it on different pages or  
20 something.  
21 A Yes. It's the -- that's the report that I've  
22 sent, the July 30th, yes.  
23 Q Okay.  
24 A That was sent electronically, so there would be  
25 an e-mail with the one-liner saying here is my report.

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1 the time lines that I had in my mind. Beyond that, no.  
2 Q Okay. You know there is an allegation in this  
3 case that Mr. Lee was Tased after he was handcuffed?  
4 A I have heard that.  
5 Q Okay. For the purpose of this question, assume  
6 that he was Tased after he was handcuffed. Would that  
7 in any way affect your opinions?  
8 A It would not change my opinions, no.  
9 Q Have you heard that there's been an enhancement  
10 or we're in the process of getting an enhancement of  
11 this video?  
12 A I have not heard that.  
13 Q Okay. Assume that this video is being  
14 enhanced. Can you foresee anything that could show in  
15 that video that would change your basic opinions about  
16 the cause of death?  
17 A I would doubt it, but I would have to obviously  
18 review it to be certain.  
19 Q Have -- do you know of anything that you need  
20 that would be helpful or could affect your opinions in  
21 this case?  
22 It's a bad question.  
23 Have you asked for anything that you haven't  
24 received?  
25 A No.

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1 Q Doctor, you brought with you the first page of  
2 the various depositions that you've read. In the  
3 process when you were -- did you read them off of a  
4 computer or did you read the actual deposition?  
5 A Most of them I read off the computer.  
6 Q How do you ever learn to read off the computer?  
7 A It was -- this is the first time, because I had  
8 so much material sent to me.  
9 Q Because I have difficulty reading off a  
10 computer versus --  
11 A Yeah, versus printing out about  
12 I-don't-know-how-many thousands of pages. Typically I  
13 use that, but this time I printed out a few of them. No  
14 notes in the margins, if that's the question there.  
15 Q That's what I was coming to. Have you read  
16 anything where you actually made a note or marked it or  
17 anything, other than what we've talked about?  
18 A No.  
19 Q Have you reviewed the video, surveillance video  
20 of what occurred in the parking lot?  
21 A I have reviewed that, yes.  
22 Q Did you find that to be helpful to your  
23 opinions?  
24 A It was -- probably didn't make a whole lot of  
25 difference in my opinions. It helped validate some of

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1 Q Is there anything that is out there that might  
2 give you more information that could affect your  
3 opinions?  
4 A Not that I can think of.  
5 MR. BEDNARZ, SR.: My two hours is over,  
6 Doctor. Thank you very much. I'm sure somebody else  
7 has got some questions.  
8 MR. BROWN: I have no questions.  
9 MS. OLIVER: Tyree? Kathleen?  
10 MS. ANDERSON: I don't have any questions,  
11 thank you.  
12 MR. HARRIS: Tyree Harris. I have no  
13 questions.  
14 MS. OLIVER: I have no questions.  
15 What was that, Kathleen?  
16 MS. ANDERSON: I don't have any questions.  
17 MS. UNDERWOOD: And Jaimee Underwood has no  
18 questions either.  
19 THE VIDEOGRAPHER: Are there stipulations or  
20 should I just close it out?  
21 MS. OLIVER: Yeah, we're done.  
22 THE VIDEOGRAPHER: This concludes the  
23 deposition of Dr. Gary Vilke, Volume 1. Number of tapes  
24 used was three. The original videotapes will be  
25 retained by Merrill Legal Solutions at 20750 Ventura

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1 Boulevard, Suite 205, Woodland Hills, California 91364.  
2 Going off the record, the time is 4:47 p.m.  
3 (Whereupon at 4:47 p.m. the proceedings  
4 were concluded.)  
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E R R A T A

1 I, the undersigned, do hereby certify that I  
2 have read the following deposition and that, to the best  
3 of my knowledge, said deposition is true and accurate,  
4 with the exception of the changes listed below:  
5

Page	Line	Explanation
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GARY VILKE, M.D.

Notary Public

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C E R T I F I C A T E

1  
2  
3 I hereby declare under penalty of perjury that  
4 the foregoing is my deposition under oath; that these  
5 are the questions asked of me and my answers thereto;  
6 that I have read my deposition and have made the  
7 necessary corrections, additions or changes to my  
8 answers that I deem necessary.

9 In witness thereof, I hereby subscribe my name  
10 this \_\_\_\_\_ day of \_\_\_\_\_, 2008.  
11  
12

GARY VILKE, M.D.

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REPORTER CERTIFICATE

1  
2  
3 I, Joyce E. Hostetler, CSR No. 5216, in and for  
4 the State of California, do hereby certify:

5 That, prior to being examined, the witness  
6 named in the foregoing deposition was by me duly sworn  
7 to testify the truth, the whole truth and nothing but  
8 the truth;

9 That said deposition was taken down by me in  
10 shorthand at the time and place therein named, and was  
11 thereafter transcribed under my direction, and the same  
12 is a true, correct and complete transcript of said  
13 proceedings;

14 I further certify that I am not interested in  
15 the event of this action.

16 Witness my hand this 22nd day of September,  
17 2008.  
18  
19  
20

JOYCE E. HOSTETLER, CSR NO. 5216